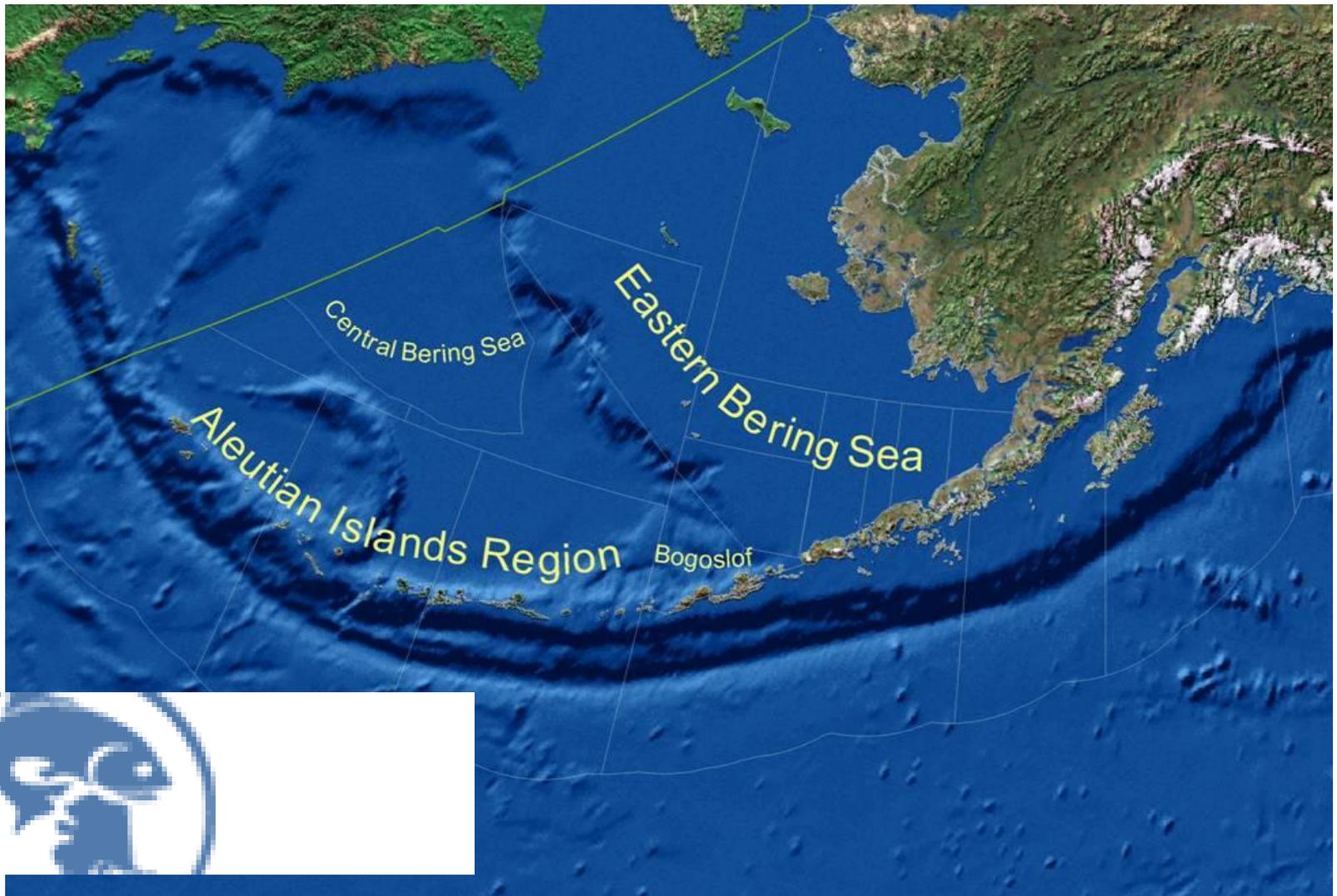


Bering Sea-Aleutian Islands Stock Assessment and Fishery Evaluation Report

Plan Team Report to the NPFMC, December 2008



General Introduction

- Team Process
- Components of SAFE Documents



BSAI Plan Team Members

(15 Members from 8 Major Agencies)

NPFMC

Jane DiCosimo (Plan Coordinator)

NMFS (AFSC)

Loh-Lee Low (Chair), Mike Sigler (Vice-Chair)

Grant Thompson (Link to the SSC)

Lowell Fritz, Kerim Aydin

Dana Hanselman, Alan Haynie

NMFS (Region) Mary Furuness

USF&W -- Leslie Slater

ADF&G -- Dave Carlile, Dave Barnard

Univ.Alaska-- Brenda Norcross

WDF&W -- Henry Chen

Halibut Comm- Steven Hare

2008 Safe Documents

1. Summary (Appendix A)
2. Status of Stocks Chapters
(75+ Authors, 24 Reports)
3. Ecosystems Considerations Chapter
(95+ Contributors)
4. Economics Chapter
(8+ Authors)

Ecosystem Considerations Chapter

- **Collection of articles from subject experts on Ecosystem Status Indicators, like**
 - Physical environment & Habitat
 - Productivity of lower trophic levels and forage fish
 - Productivity of Herring, salmon, groundfish, benthic community, marine mammals, seabirds
 - Ecosystem community indicators
- **Climate effects & environmental trends**
- **Fishing effects on ecosystems**
- **Stock chapters now also have ecosystem discussion to add effects of regime shifts, changing climate conditions, food base characteristics, over-winter survival on recruitment, etc**
- **Kerim Aydin made presentation to SSC & AP**

Economics Chapter

- **Figures and Tables**
 - Catches, Discards, Bycatch Rates
 - Exvessel Prices of Species
 - Fishery Values
 - Vessel Statistics & Vessel Activities
 - Employment Statistics
 - Currency Exchange Rates
- **Reports of Alaska Groundfish Market Profiles**
 - Pollock Fillet, Surimi and Roe
 - Pacific Cod
 - Sablefish
 - Yellowfin Sole and Rock Sole
 - Arrowtooth Flounder
 - Alaska Groundfish Export Market Forecasts
- **Socio-economics, Cultural and Community Profiles**
- **Other Economics Research and Data Collection Reports**

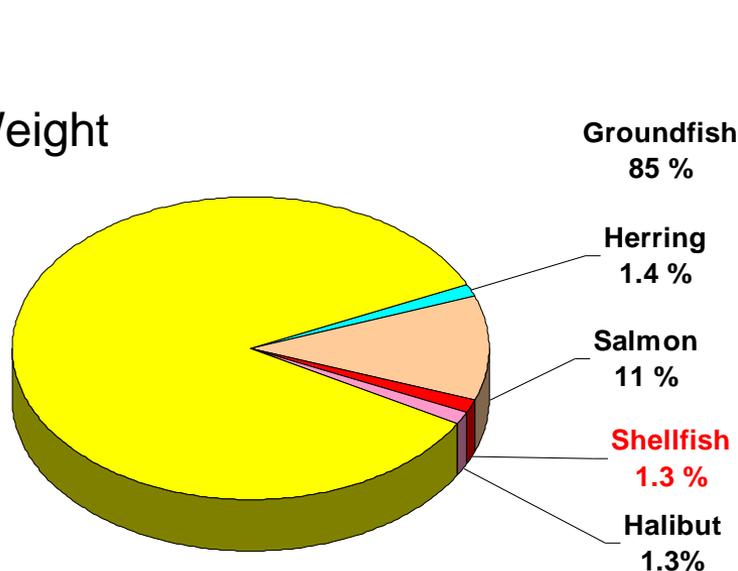
General Overview Slides

Alaska Fisheries Catch 2007

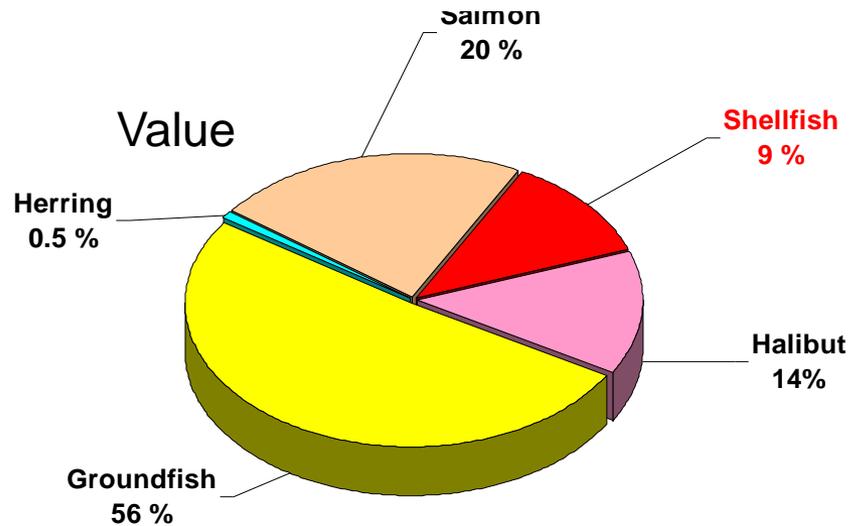
Catch Weight = 2.4 Million MT

Catch Value = \$1.55 Billion

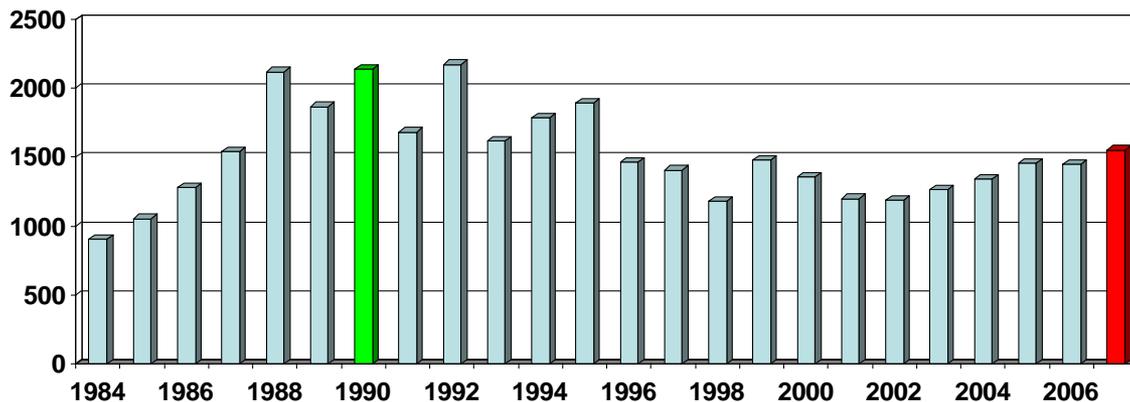
Weight



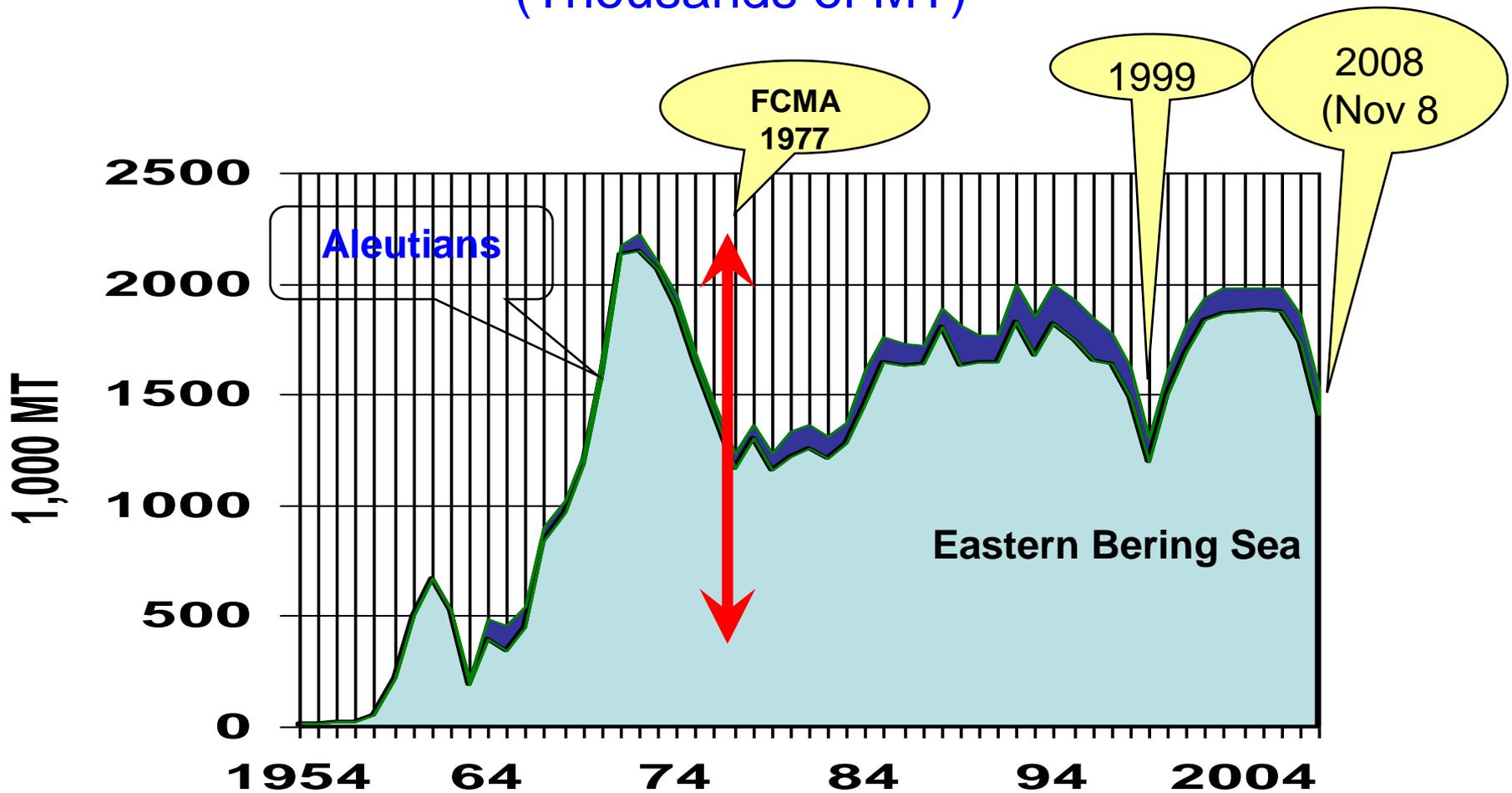
Value



Dollar Value of Alaska's Fisheries has been increasing, but below historical highs



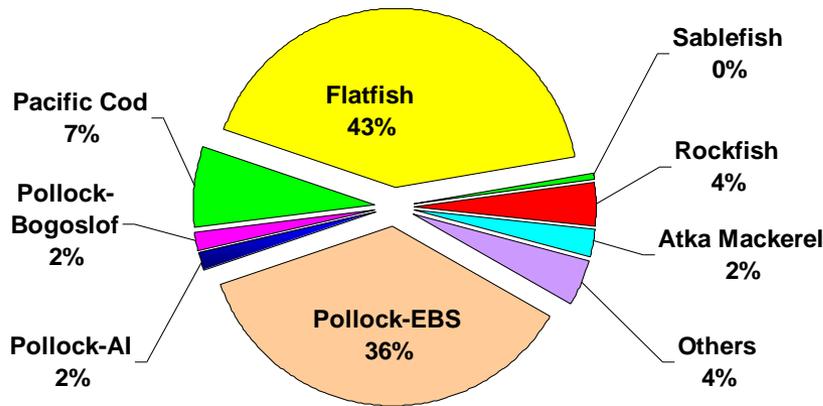
Catch History of Total BSAI Groundfish 1954-2008 (Thousands of MT)



Summary Result of Dec 2008 BSAI Assessment

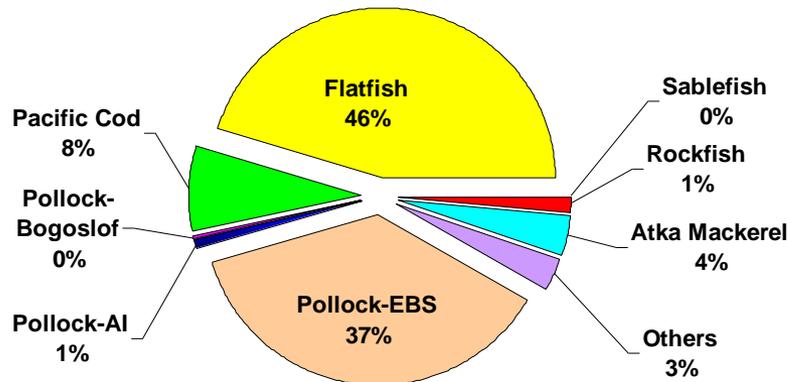
Exploitable Biomass versus ABCs

(Percent Change from 2008-2009)



Biomass = 17.2 mmt

Up 3.8%

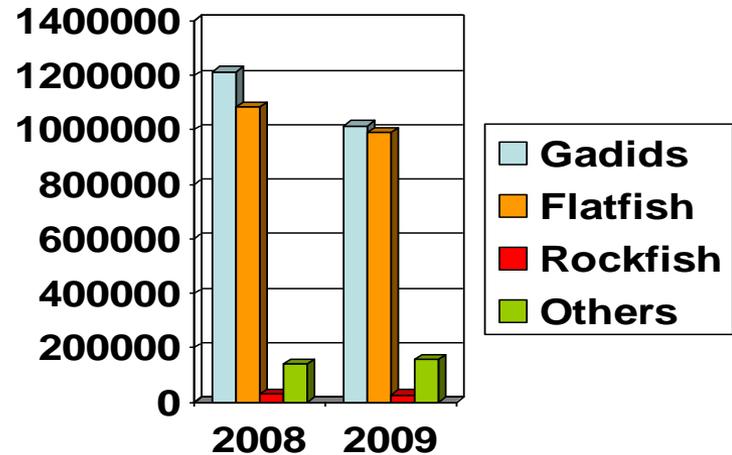
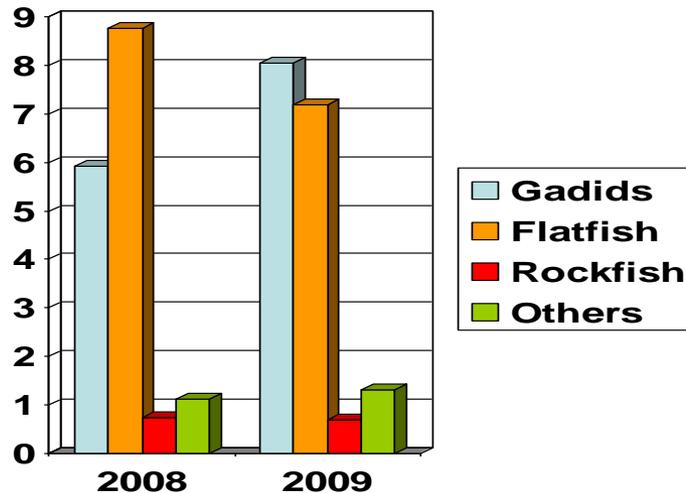


ABC = 2.19 mmt (Within 10% of 2 mmt OY)

Down 11%

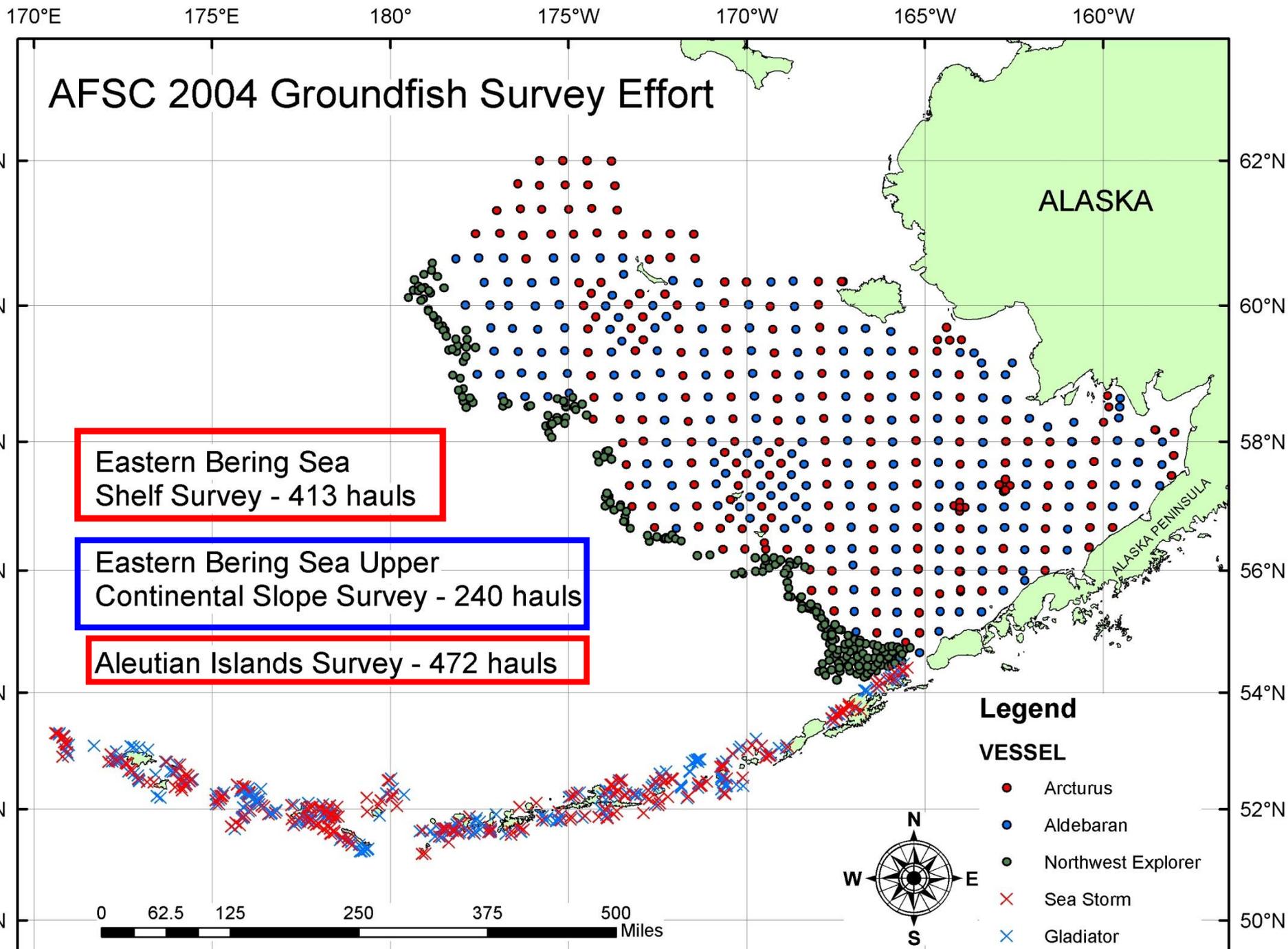
BSAI Percent Changes by Major Groups, 2008-09

Groups	Biomass	ABC
Gadids	+ 36	- 16
Flatfish	- 18	- 11
Rockfish	- 7	- 7
Others	+ 16	+ 13
Total	+3.8	- 11



Stock Assessment Process and Assessment Themes

- Survey Strategies
- Survey Stations
- Notes on Environmental Conditions
- Stock Assessment Themes



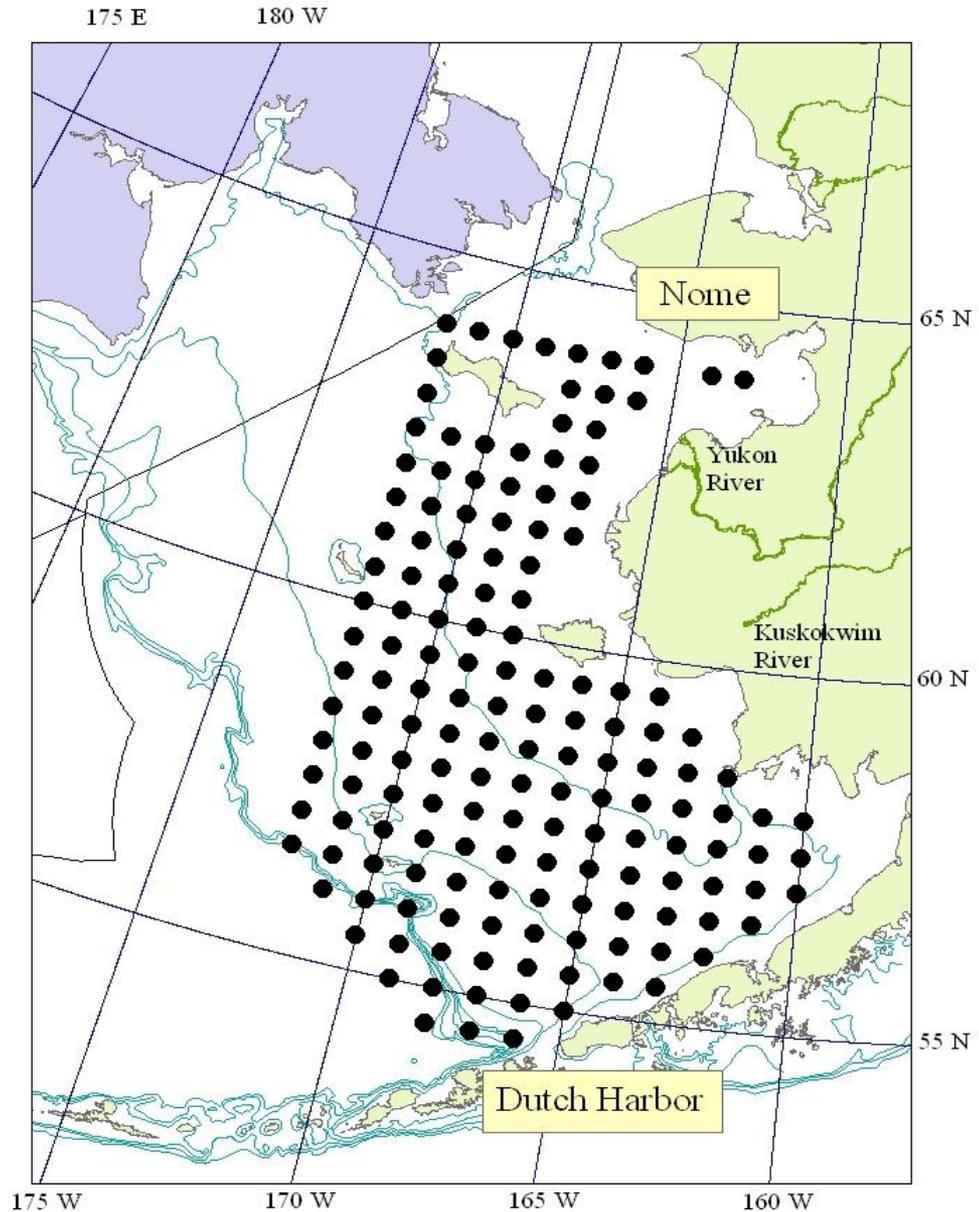
Notes on Aleutians Surveys

- **Trawl Surveys are scheduled every 2 years**
- **The 2008 Survey was cancelled**
- **Team recommends scheduled surveys to continue**
- **As surveys directly affect assessments on**
 - **Aleutians pollock and Pacific cod**
 - **Atka mackerel**
 - **Aleutians Rockfish complex, including POP**

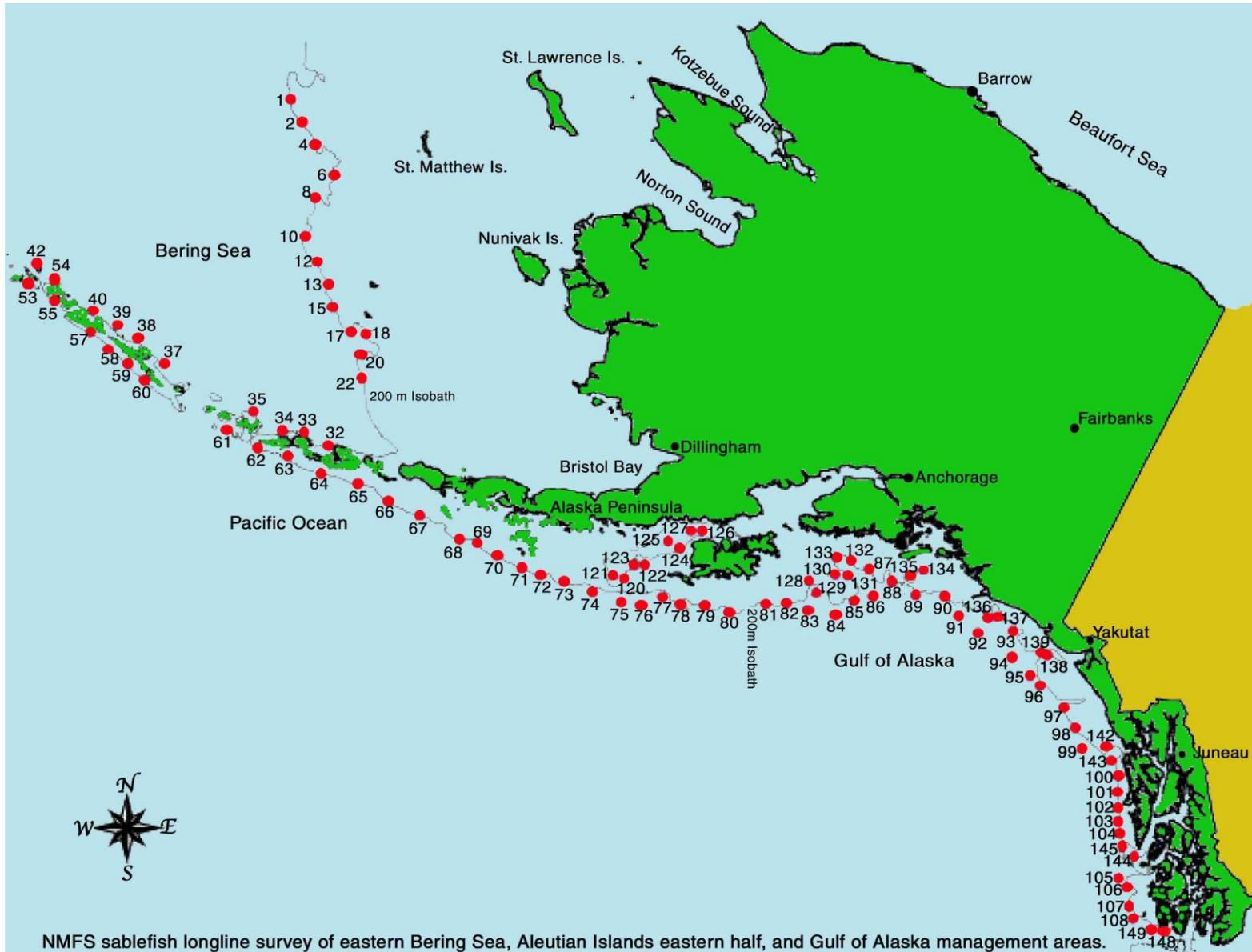
**U.S. BASIS
Cruises, 2003-
2008**

**Near Surface
Surveys of
Young Fish +
Oceanography**

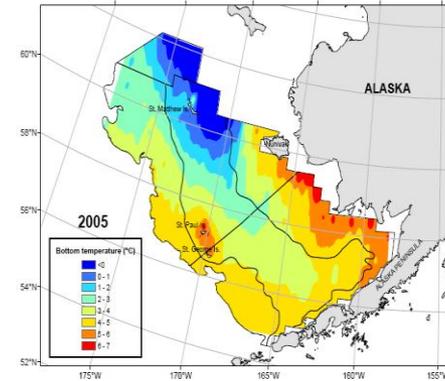
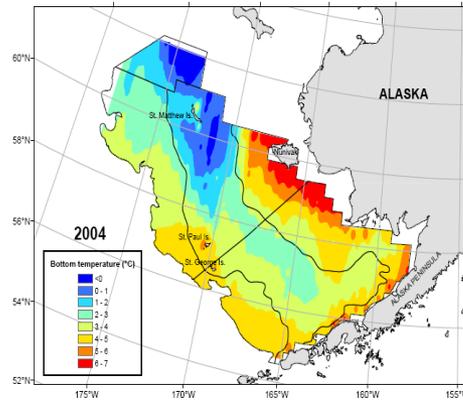
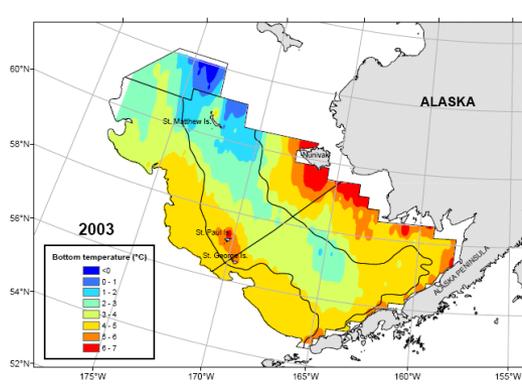
**Covered 3 warm
& 3 colder years**



Sabelfish Longline Survey

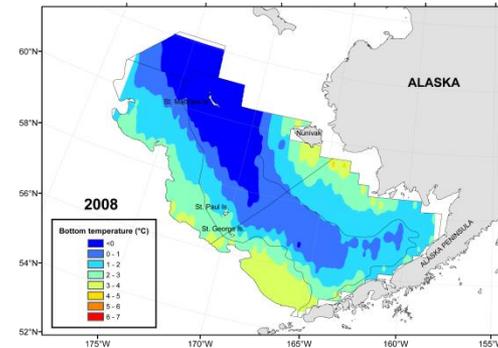
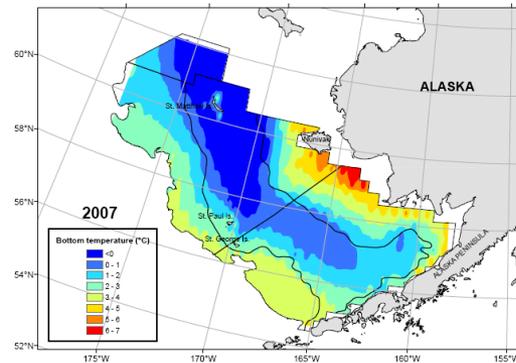
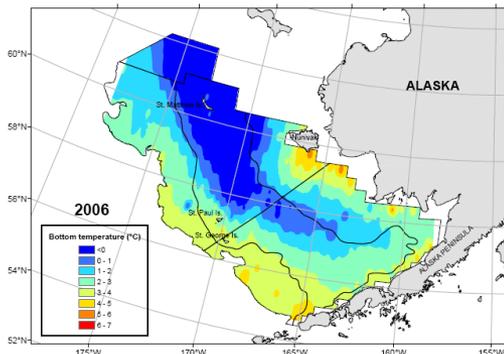


Bottom Temperature Profiles from Surveys, 2003-2008 [Red is warm, Blue is cold]



**Warmer
2003-05**

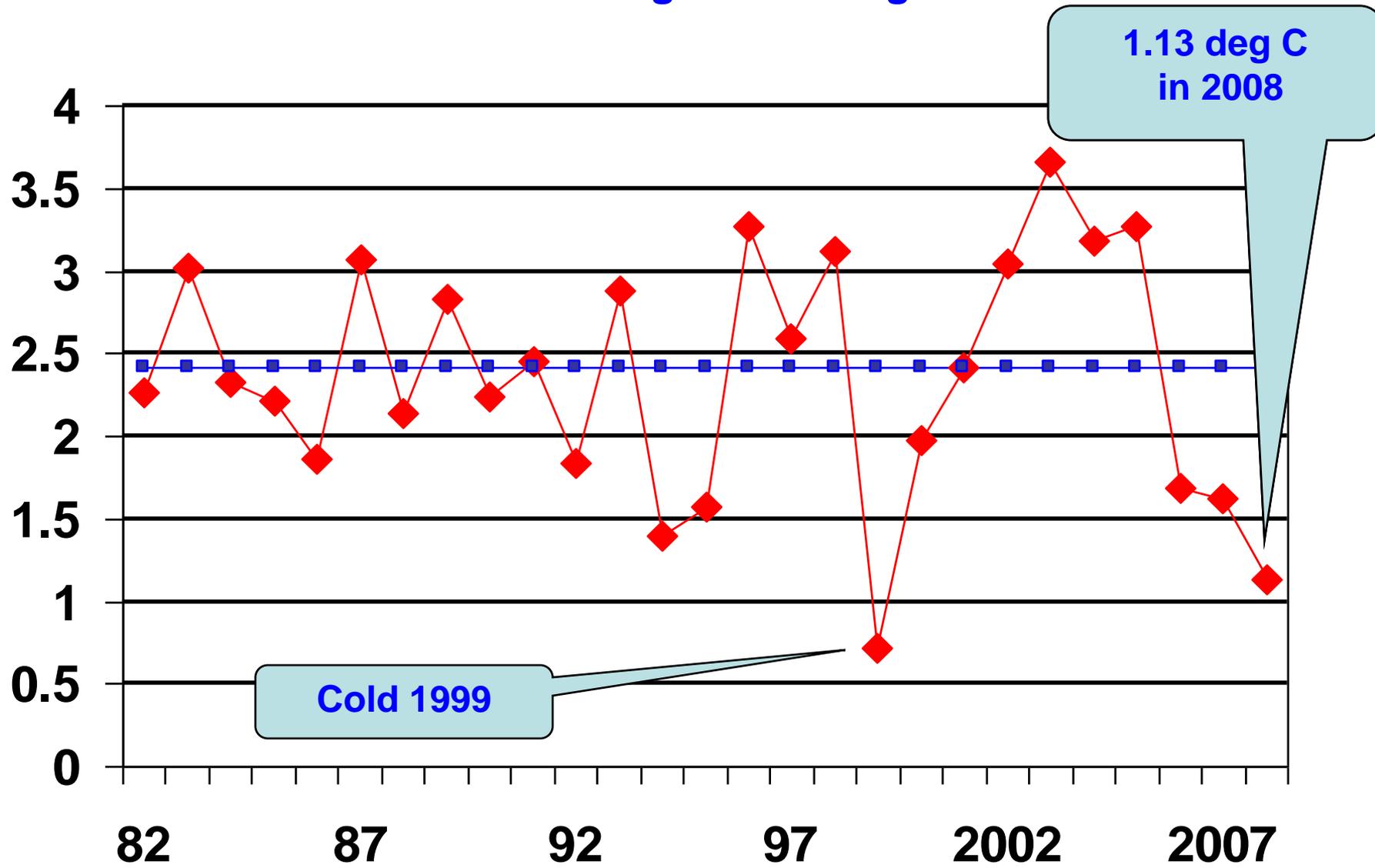
**Colder
2006-08**



Average Bottom temperature, 1982-2008

Eastern Bering Sea NMFS Standard Survey Stations

1982-2008 Average = 2.42 deg C



Stock Assessment Theme

Appendix A Plan Team Summary, Pages 7-8

1. Estimate Biomass

- Surveys....Trawls, Hydroacoustics, Longlines**
- Models.....Age Structured Population Dynamics Models**

2. Determine Exploitation Rates

(Harvest Control Rules by 6-Tier System)

Goal: Exploitation Rates x Biomass

Harvest Control Rules

Based on Quality of Data

(Page 7 of ASFE Appendix A)

Tier 1 -- Reliable B, Bmsy, pdf of Fmsy

Tier 2 -- Reliable B, Bmsy, Fmsy, F35, F40

Tier 3 – Reliable B, B40, F35, F40

Tier 4 – Reliable B, F35, F40

Tier 5 -- Reliable B and M

Tier 6 – Reliable Catch History Data

Parameters of Special Attention

Biomass Levels:

B_{msy} (of the exploitable population)

FSB (Female Spawner Biomass)

B 20% (probability of falling below level)

Fishing Mortality Rates:

F *overfishing* ... Example F 35%

F *abc* Example F 40%

Typical Format of Chapter Overviews with SSC by Grant Thompson

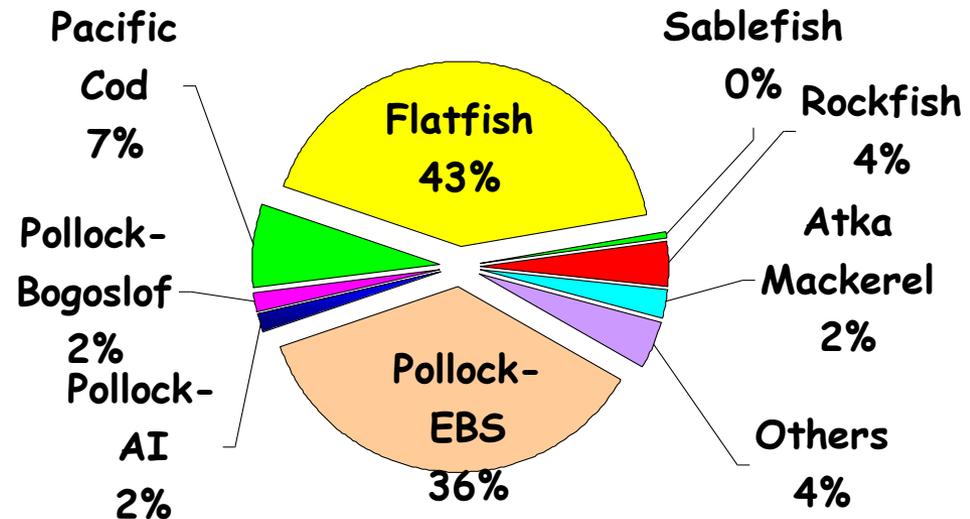
- **Author responses to SSC comments**
- **New data**
- **Changes in analytic approach**
- **Stock status and trend**
 - Recruitment strengths and weaknesses
 - Age+ and spawning biomass trends
 - 2009 spawning biomass projection
- **ABC**
 - Tier determination
 - 2009, 2010 maxABC
 - Recommended ABC (if < max)
- **OFL**
- **4-panel graphical summary**

Stocks with “major” Model Revisions

- **AI pollock**
 - CIE review last summer
- Pacific cod
- **Yellowfin sole: split sex**
- **Northern rock sole: split sex**
- Blackspotted/rougheye: first use of age-structured model
- **Atka mackerel**
 - CIE review last summer
- Alaska skate

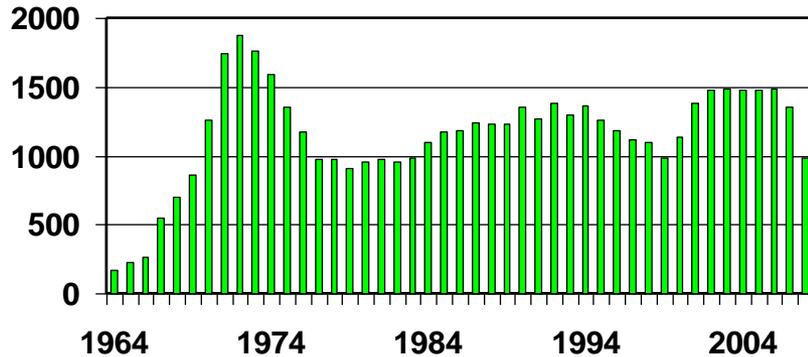
Overview of Species Summary Slides

- By Species Groups
- Details of Key Stock Analyses will be presented by Jim Ianelli
 - Pollock (EBS)

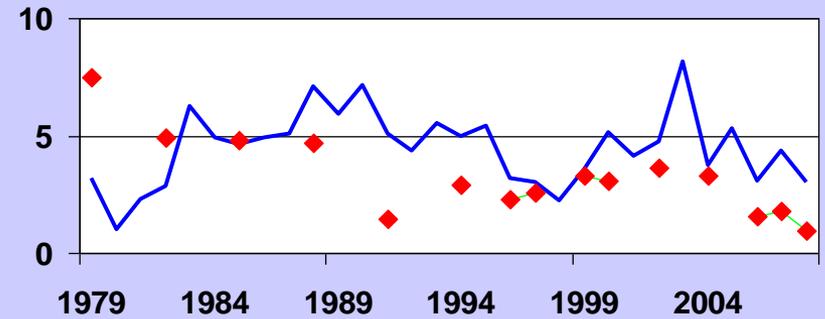


C1 - EBS Pollock Stock Assessment, Dec 2008

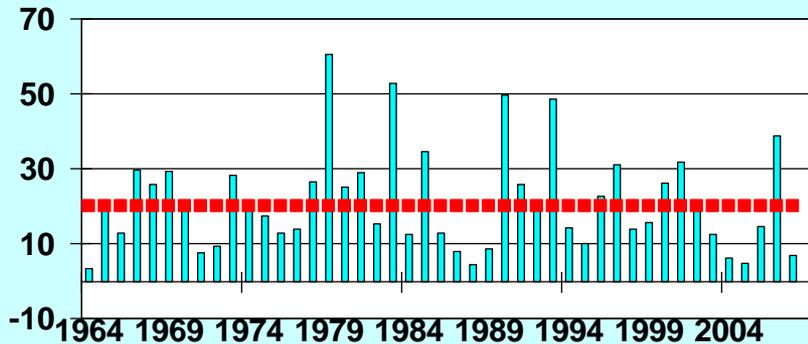
Catch (1,000 M.Tons) 1964-2008
2008 Catch through Nov 8



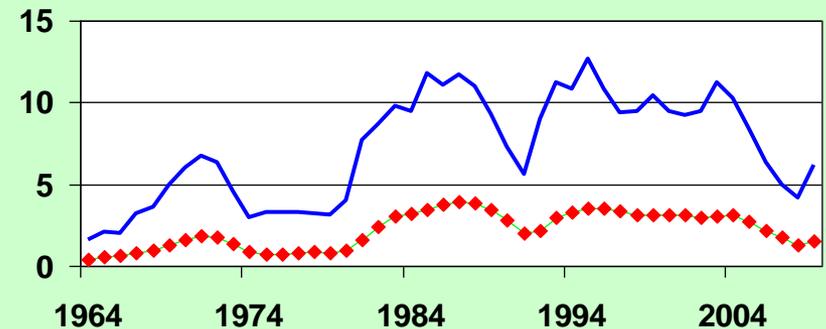
Survey Biomass 1979-2008
Line=On-Bottom Trawl, Diamonds Dots = Off-Bottom



EBS Pollock Age 1 Recruits in Billions
Average Recruitment 1964-2008= 20

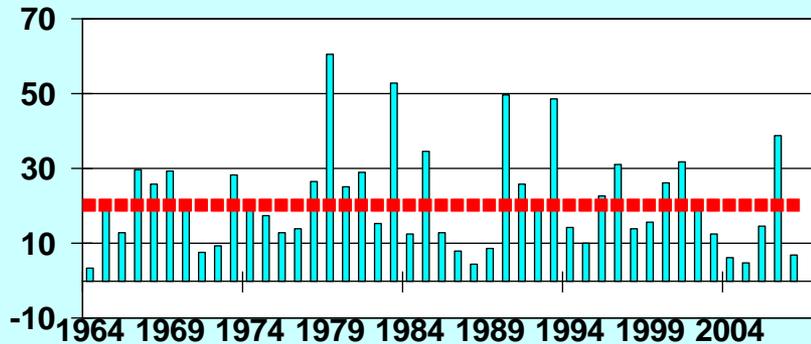


Model Biomass 1964-2009
Line=Age 3+ Biomass, Diamonds Dots = Female Spawning Biomass



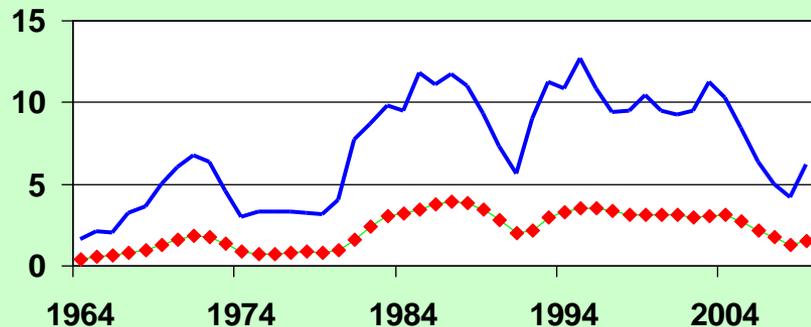
C1 - EBS Pollock Notes, Dec 2008

EBS Pollock Age 1 Recruits in Billions
Average Recruitment 1964-2008= 20



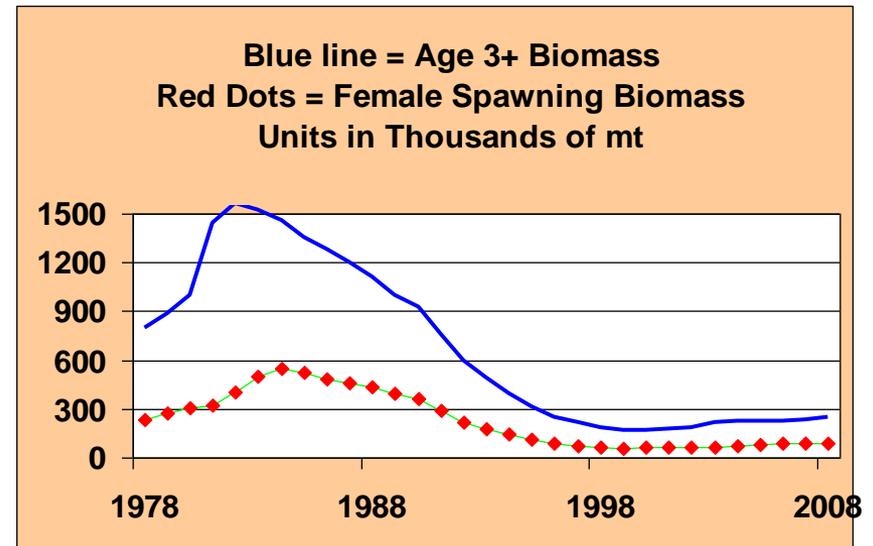
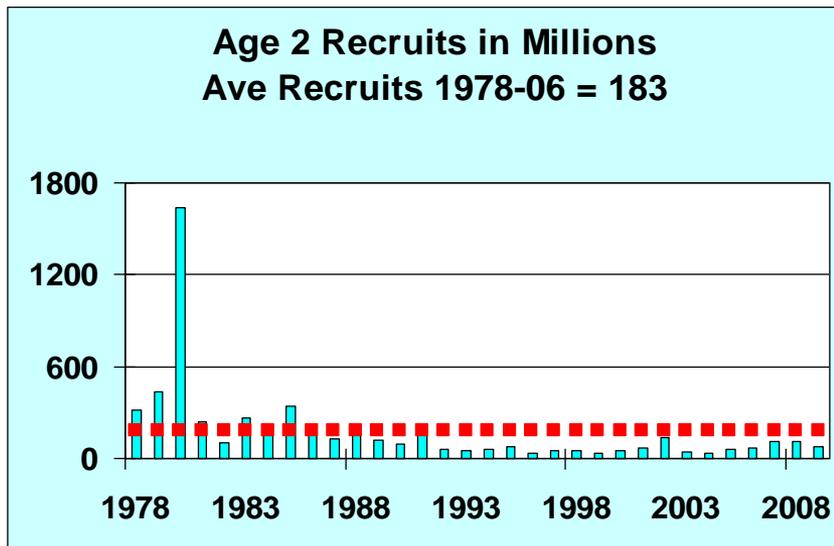
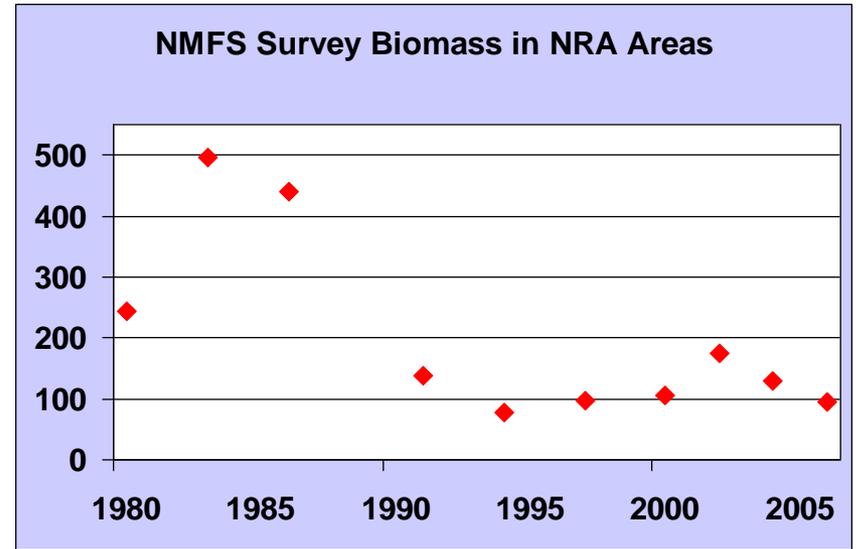
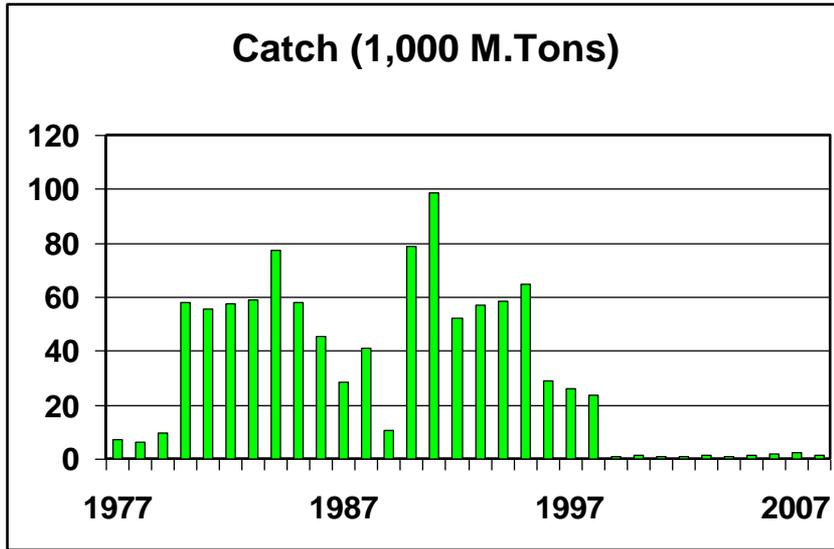
Model Biomass 1964-2009

Line=Age 3+ Biomass, Diamonds Dots =
Female Spawning Biomass

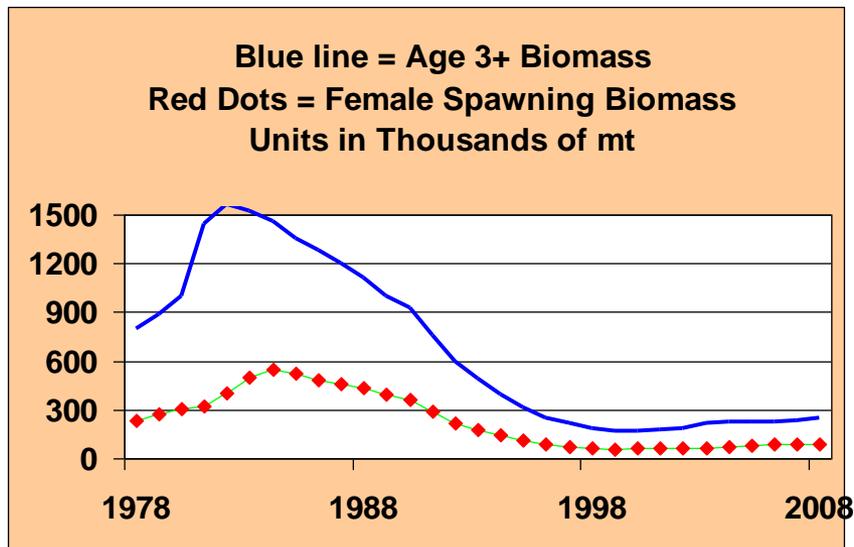
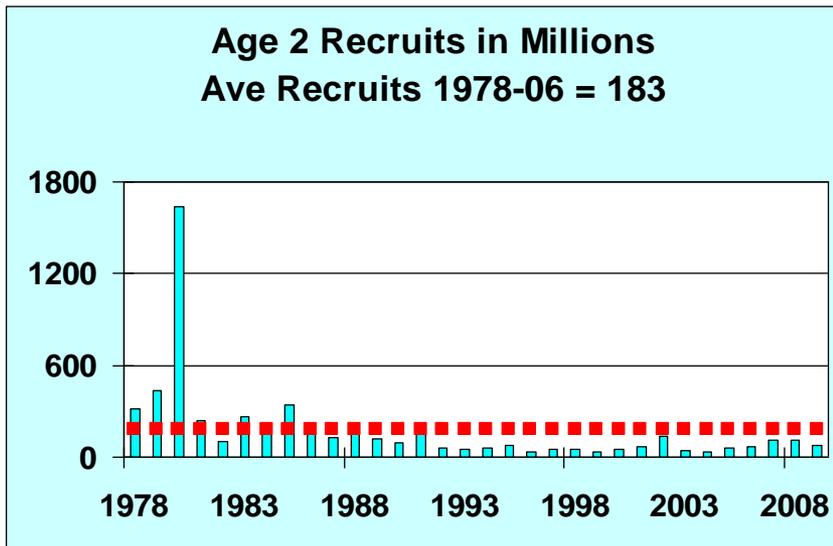


- No big changes in analytic approach
- Stock status and trend
 - Similar to last year's projections
 - 2001-2005 year classes all weak; 2006 strong
 - Age 3+ biomass has been declining since 2003
 - 2008 age 3+ biomass lowest since 1980 but to turn up after 2009
 - Spawning biomass has also been declining & to turn up
 - 2009 spawning biomass 34% below BMSY and not likely to reach BMSY until 2010
- Pr($B < B_{20\%}$) = 15% in 2008, < 10% in 2009

C1a - Aleutian Islands Pollock Assessment, Dec 2008

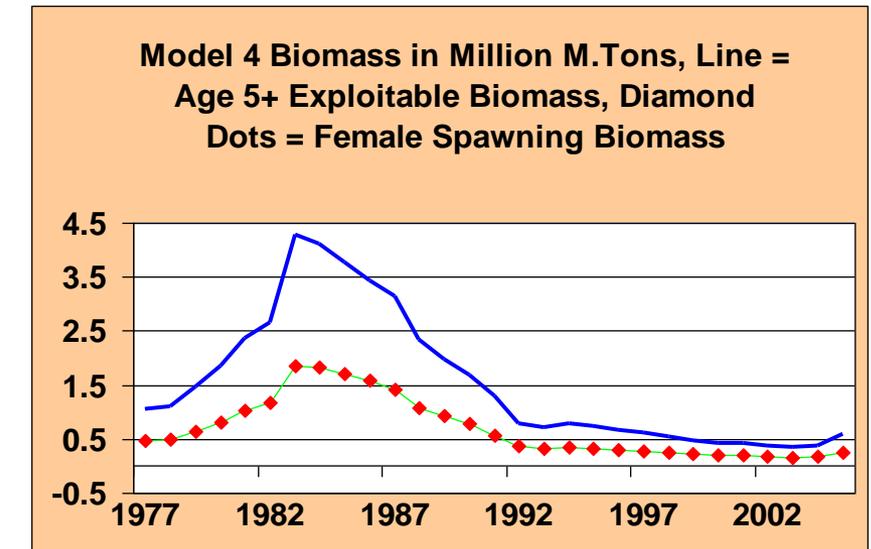
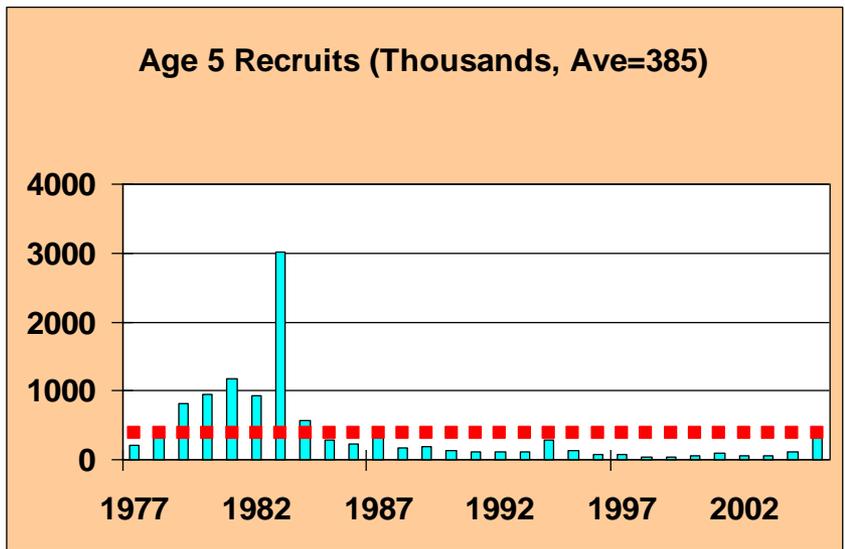
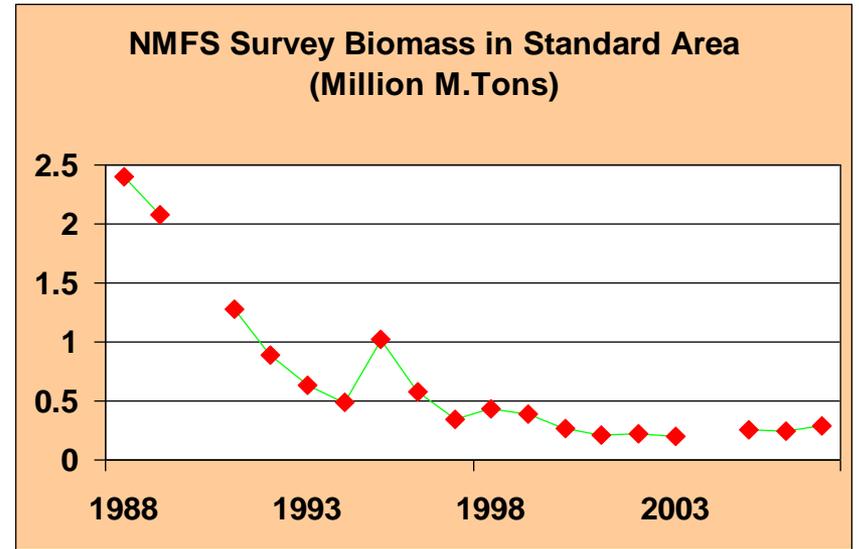
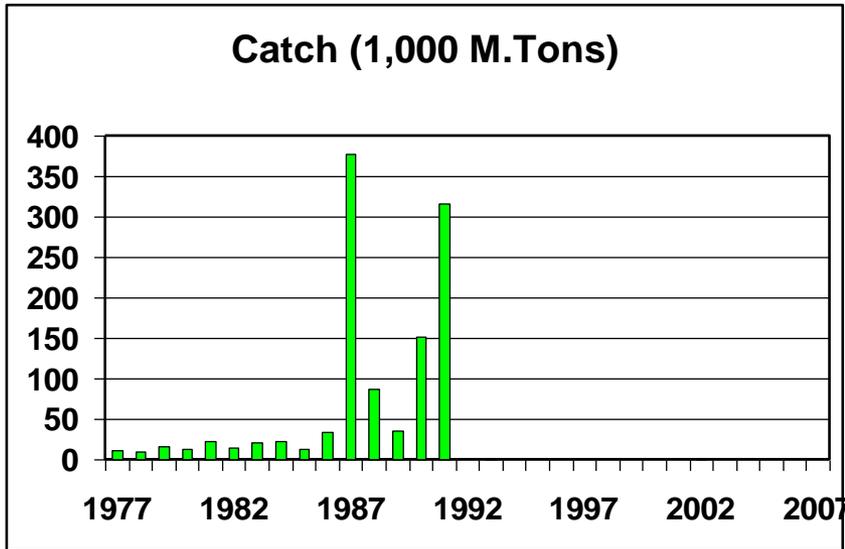


C1a - Aleutian Islands Pollock Notes, Dec 2008

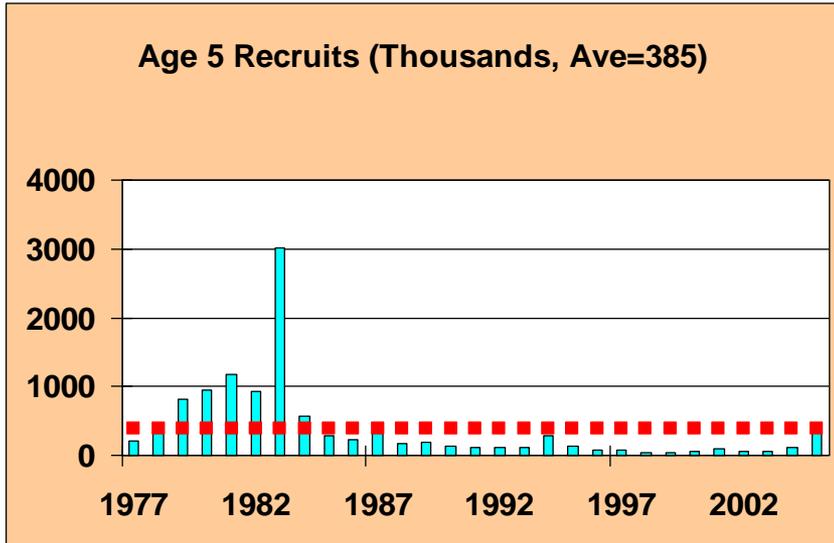


- **No fishing since 1999; except for Special Aleut Corp Allocation of 19,000 t from 2005**
- **Age structured model is available; but model is in state of transition**
- **Team recommends Tier 5 approach for ABC**
 - Assessment still qualifies for Tier 3, but b
 - Phased transition from recent catches to Tier 3 maxABC advised

C1b - Bogoslof Island Pollock Assessment, Dec 2008



C1b - Bogoslof Island Pollock Notes, Dec 2008



- **Assessment is now on a biennial cycle**

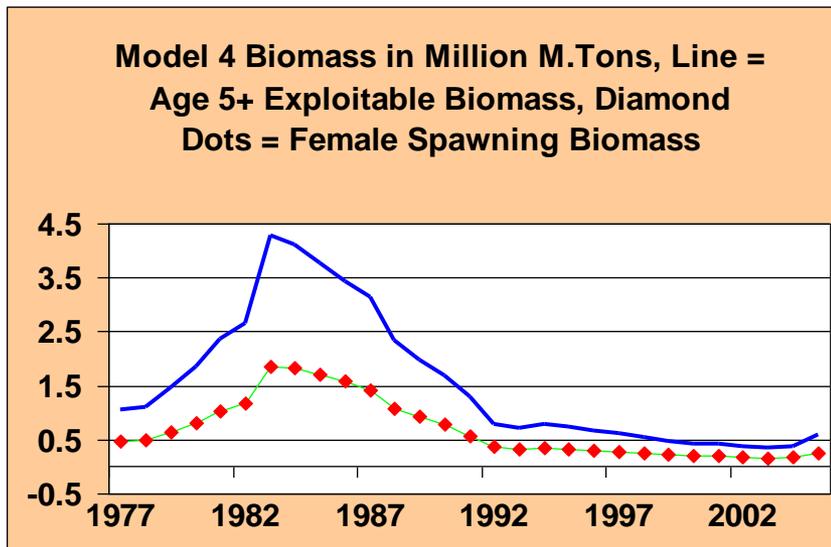
 - 2008 is an “off” year; so new data

- **Stock status and trend**

 - Post-1999 survey biomasses all lower than pre-2000

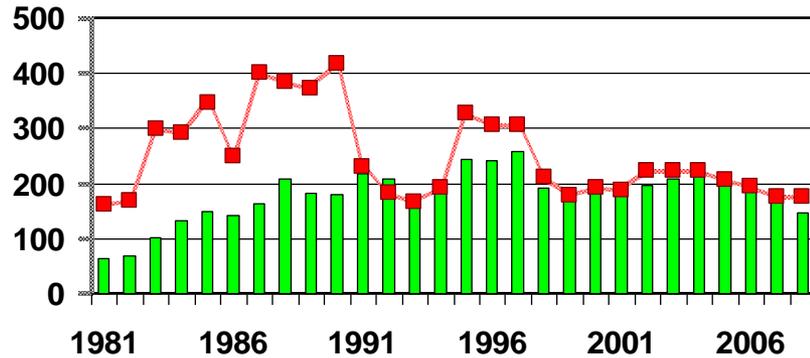
 - 2007 survey estimate of 292,000 t highest since 2000

- **ABC by Tier 5**

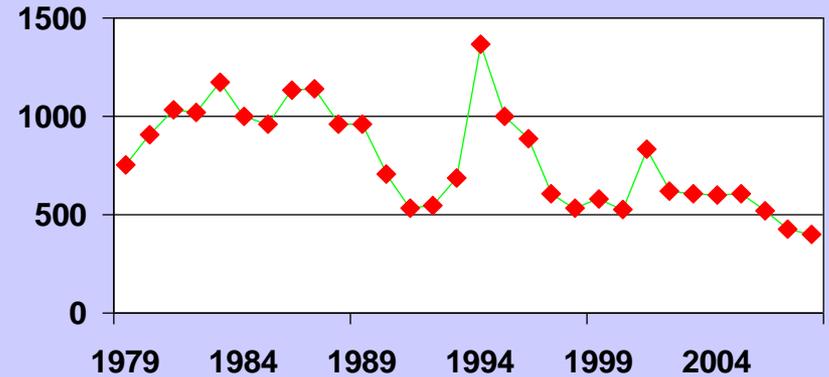


C2- Pacific Cod Stock Assessment, Dec 2008

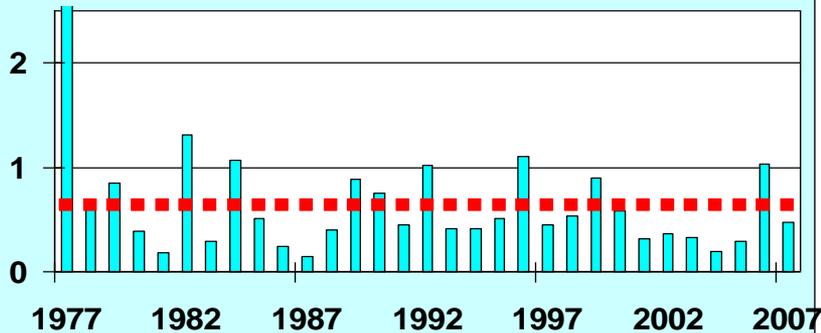
Catch (1,000 M.Tons in bars) and ABC (red line)



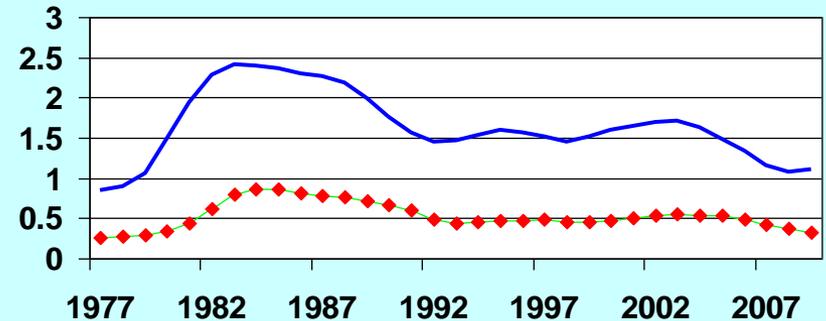
NMFS EBS Survey Biomass in Thousands of M.Tons



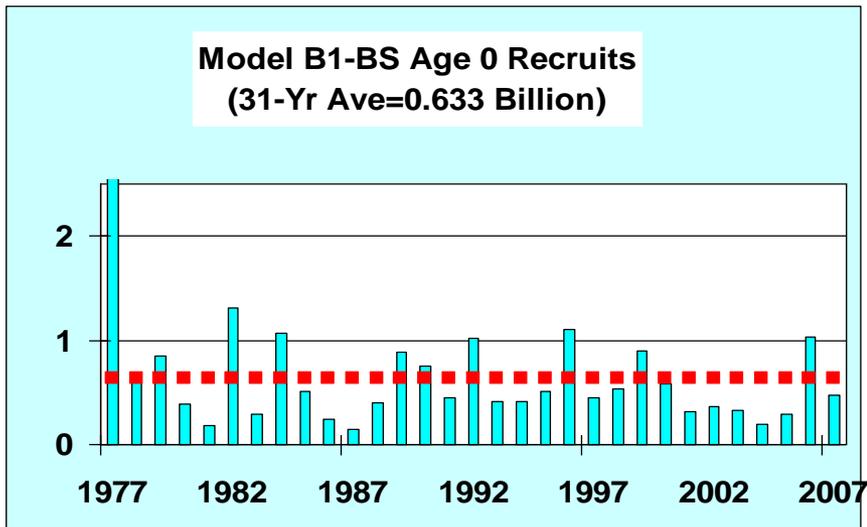
Model B1-BS Age 0 Recruits (31-Yr Ave=0.633 Billion)



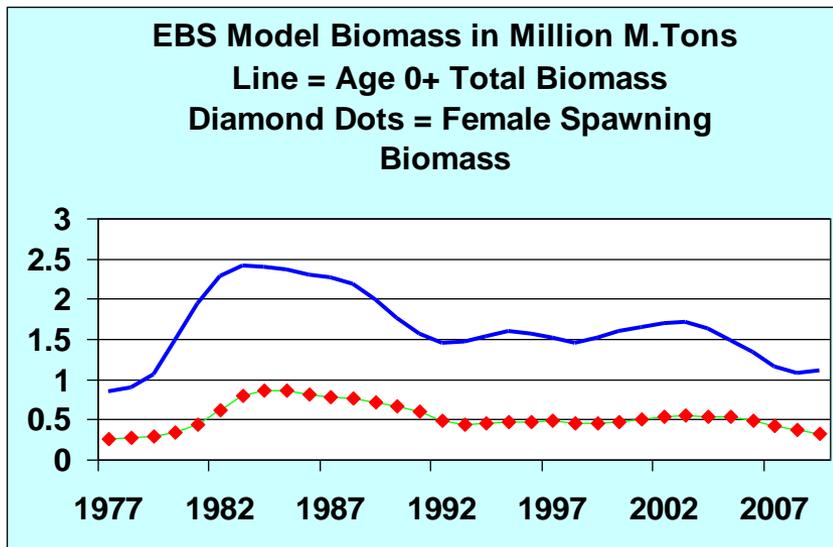
EBS Model Biomass in Million M.Tons
Line = Age 0+ Total Biomass
Diamond Dots = Female Spawning Biomass



C2- Pacific Cod Notes, Dec 2008



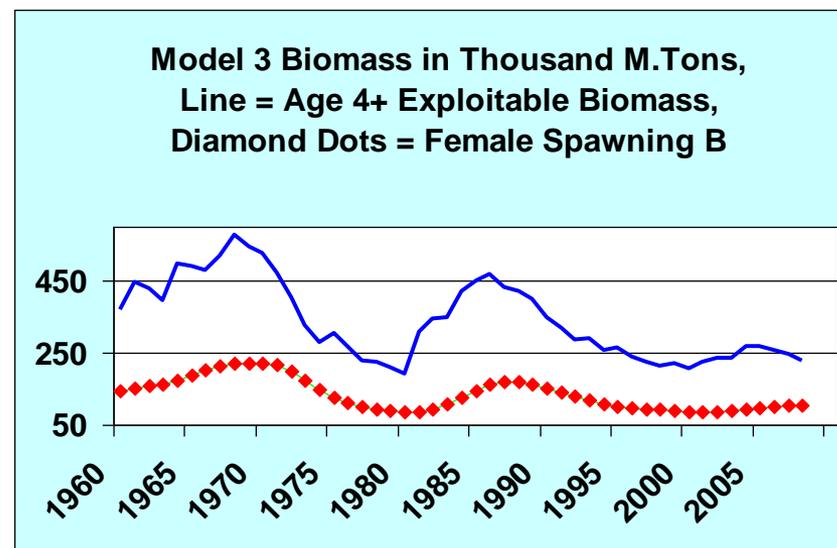
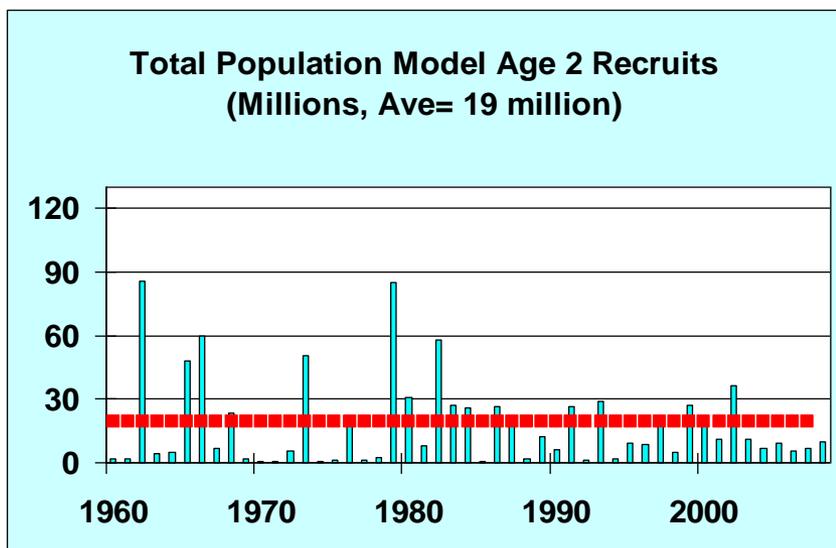
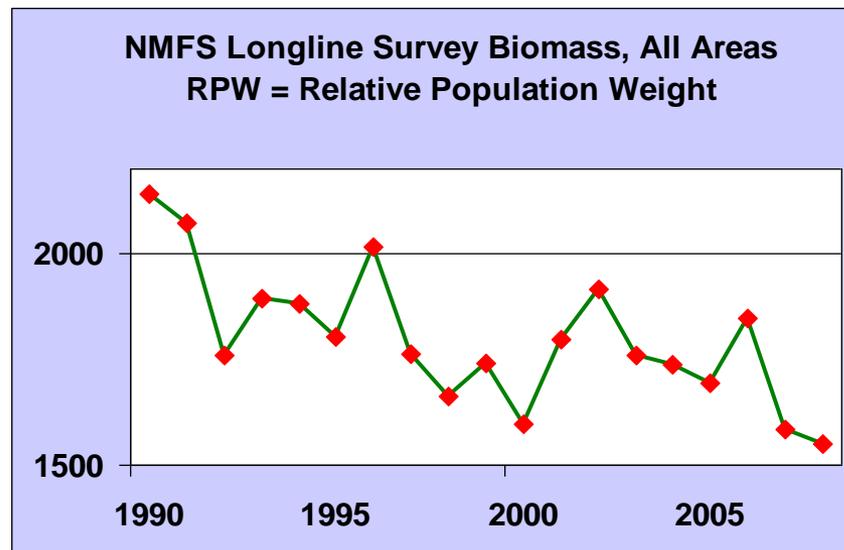
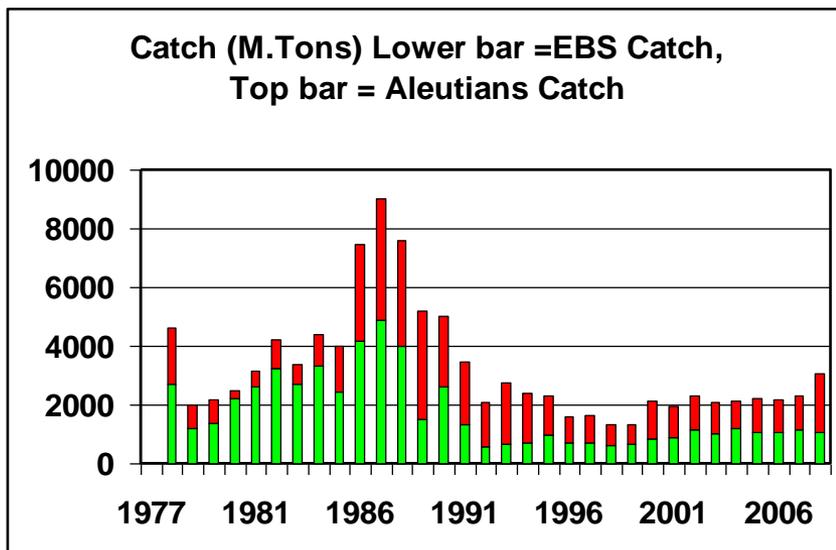
- Many Changes in Analytical Models, 8 versions
- Team support Model B1
- Team supports 2009 ABC = 176,000 t (3% below max ABC)
 - Same as 2007-2008 ABCs
 - Biomass still declining
 - Five consecutive poor year classes spawned from 2001-2005
 - But, 2006 year class has looked strong last year and this year
- SSC recommends ABC = Model B1 max ABC of 182,000 t



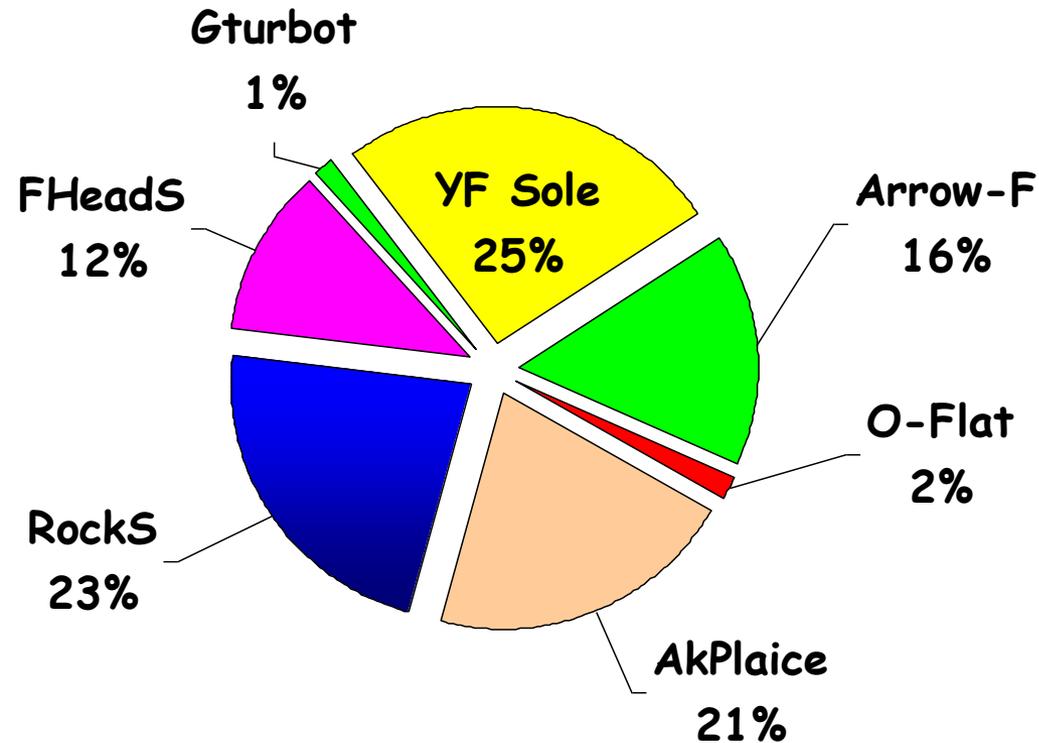
Chapter 3: sablefish (p. 405)

- To be covered in GOA Plan Team report
- ABC is apportioned from a Single Model
 - 2009 maxABC = 2,720 t (EBS); 2,200 t (AI)
 - 2010 maxABC = 2,520 t (EBS); 2,040 t (AI)

C3 - Alaska-wide Sablefish Stock Assessment, Dec 2008



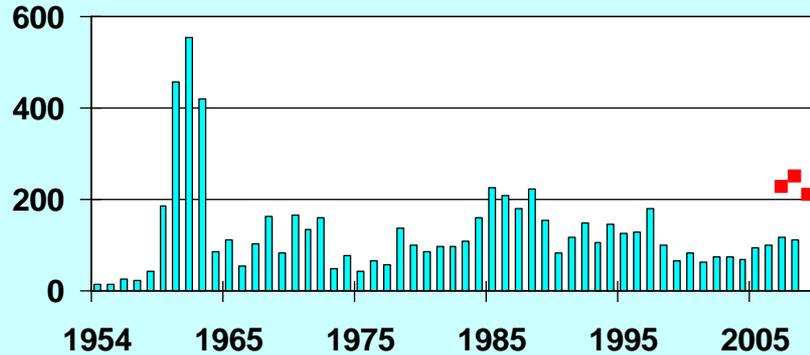
Flatfish Group



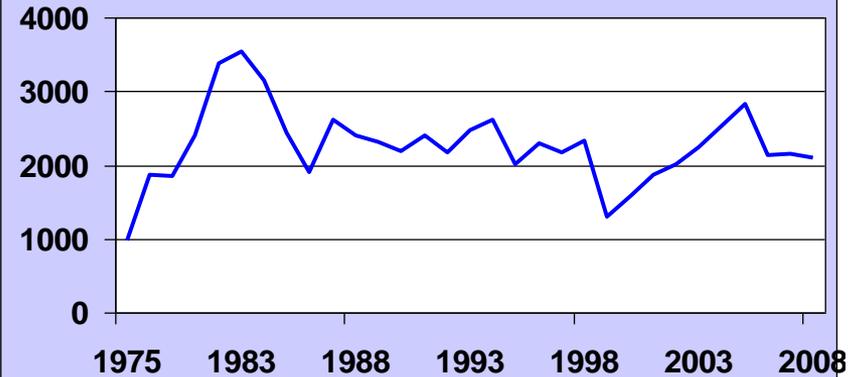
- **43% of Gfish Complex**
- **Flatfishes are high in biomass, except Greenland Turbot**
- **But GT is Improving**

C4 - Yellowfin Sole Stock Assessment, Dec 2008

Catch History and recent ABCs (red dots)
Units in 1,000 mt



NMFS Bottom Trawl Survey Biomass
(Thousand M. Tons)



Age 5 Recruits in Billions, Ave= 1.5

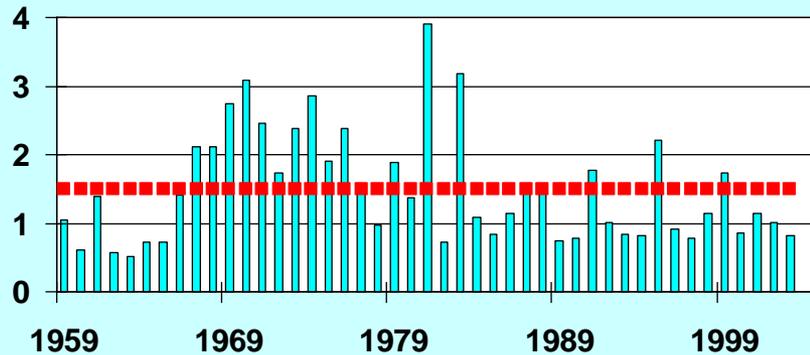
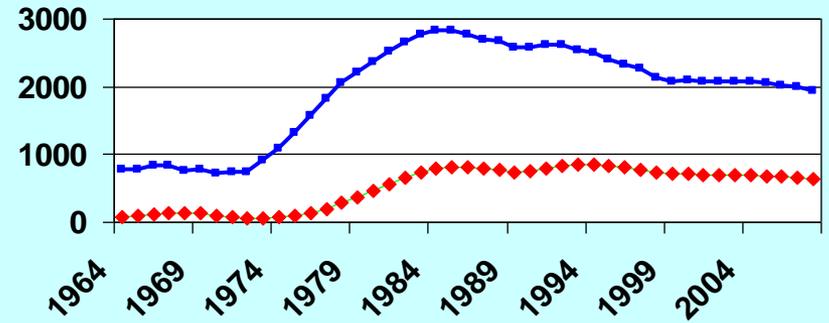


Table 4.16 Model Biomass in Thousand M.Tons, Line = Age 2+ Biomass, Red Diamond Dots = Female Spawning Biomass



C4 - Yellowfin Sole Notes, Dec 2008

Age 5 Recruits in Billions, Ave= 1.5

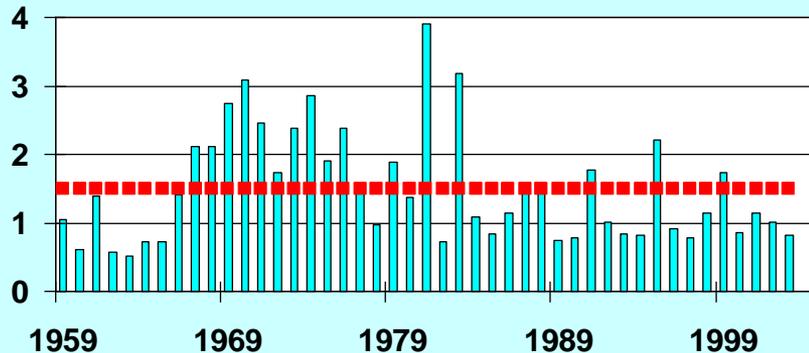
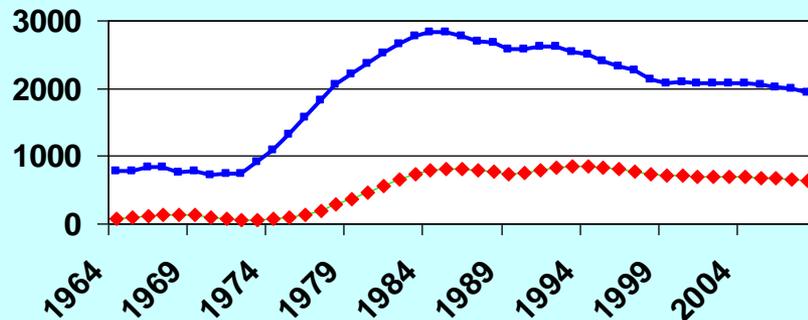


Table 4.16 Model Biomass in Thousand M.Tons, Line = Age 2+ Biomass, Red Diamond Dots = Female Spawning Biomass



- New split sex model analysis

- Tier 1a

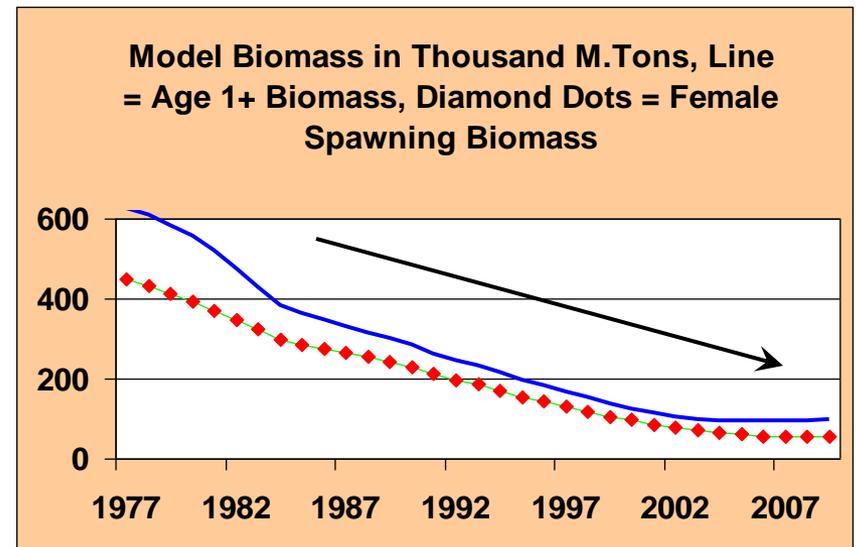
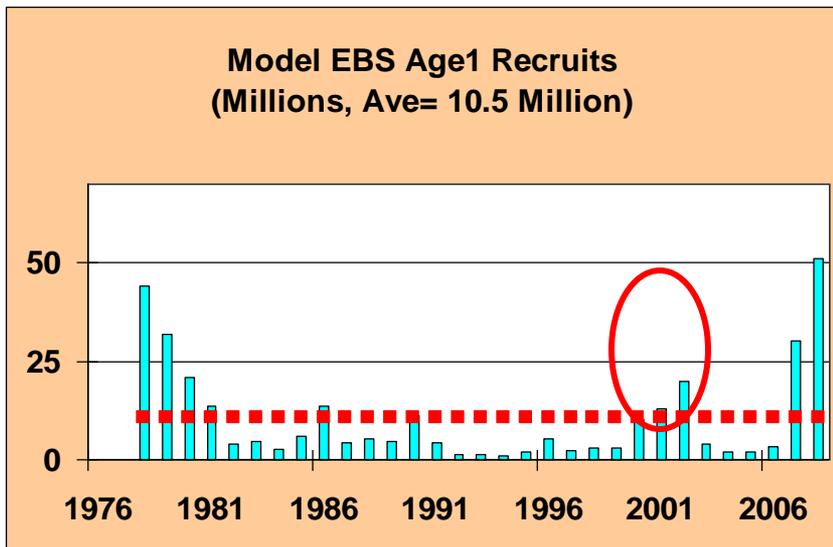
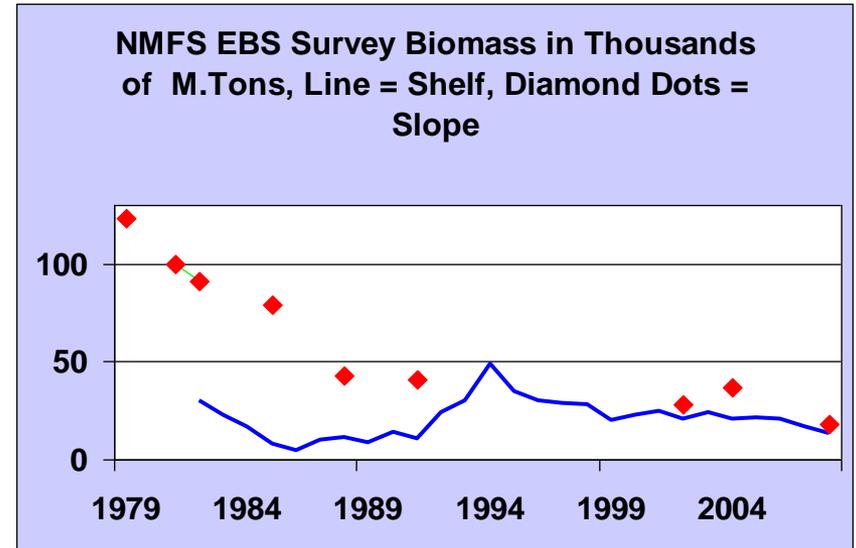
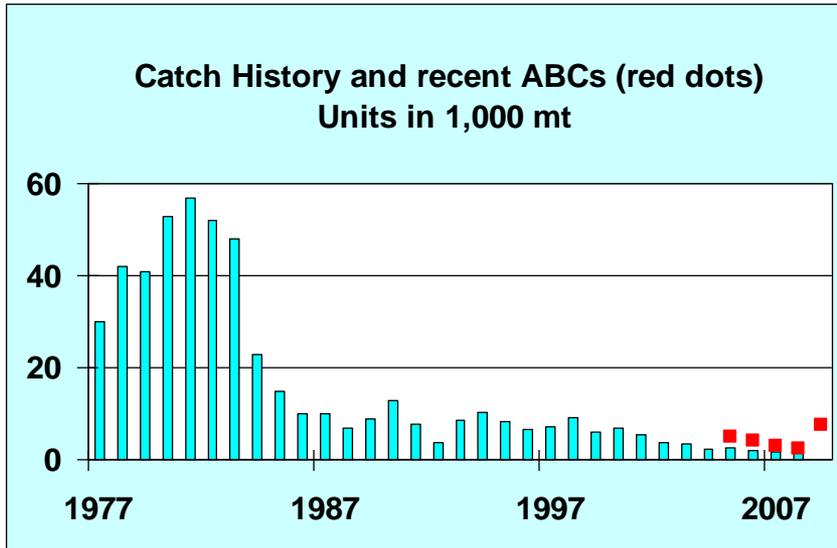
- Status and Trend

- Recruitment had been above average for many years but declining in recent years

- Age 2+ biomass declining slowly since 2000

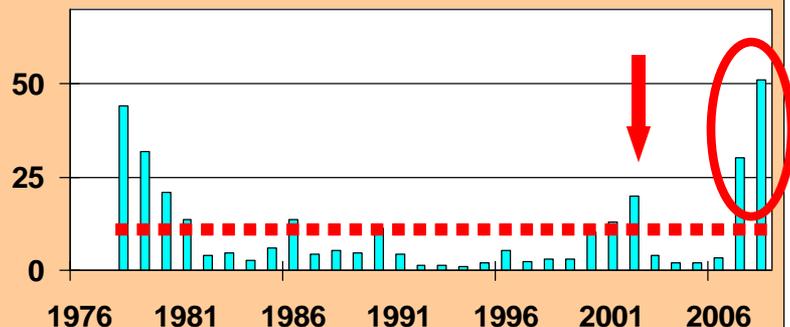
- Spawning biomass declining slowly since 1994

C5 - Greenland Turbot Stock Assessment, Dec 2008

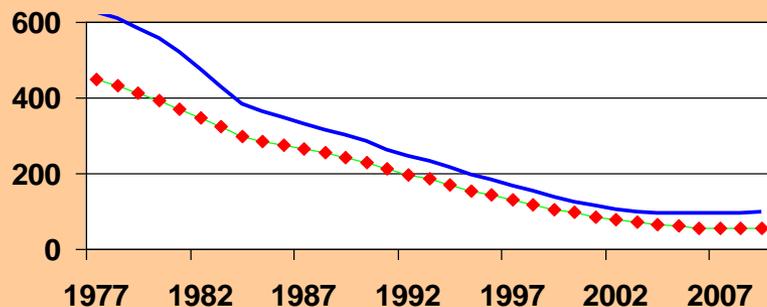


C5 - Greenland Turbot Notes, Dec 2008

Model EBS Age1 Recruits
(Millions, Ave= 10.5 Million)

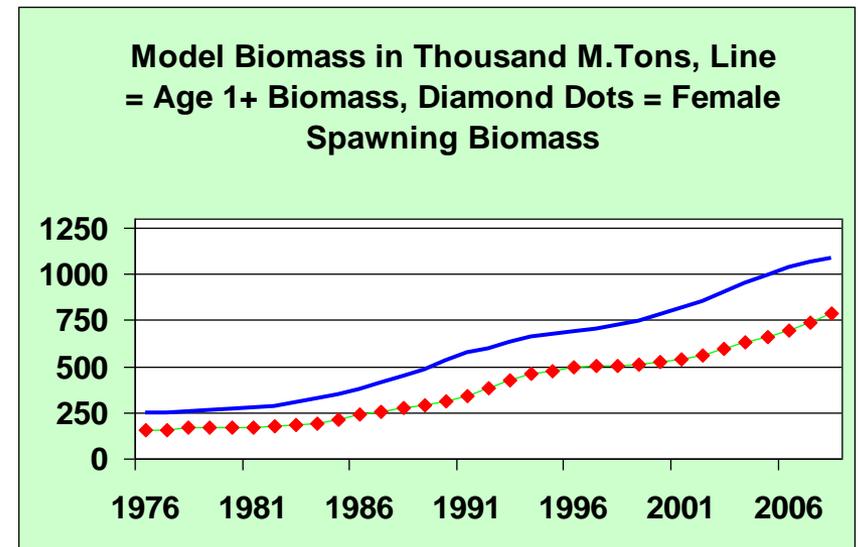
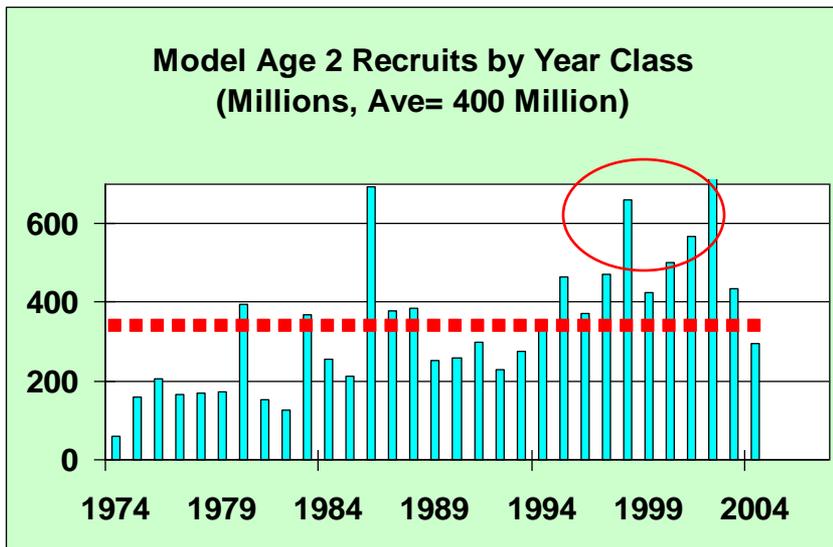
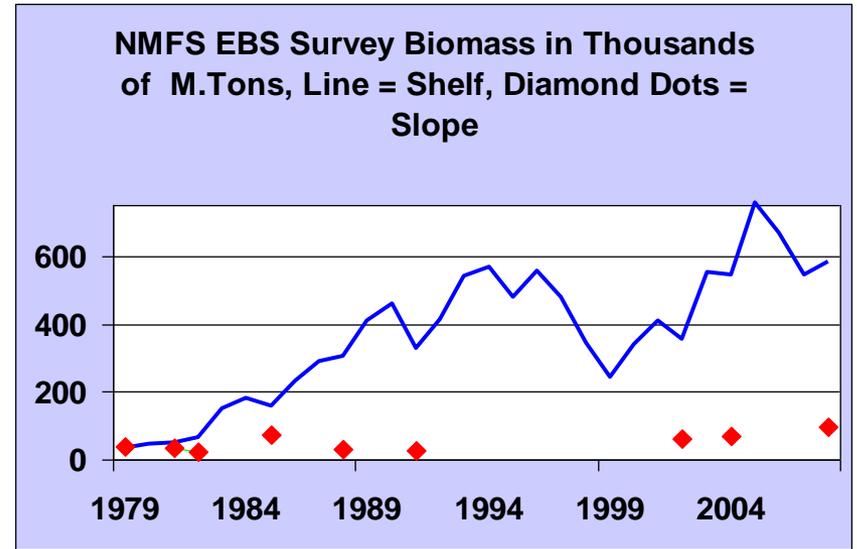
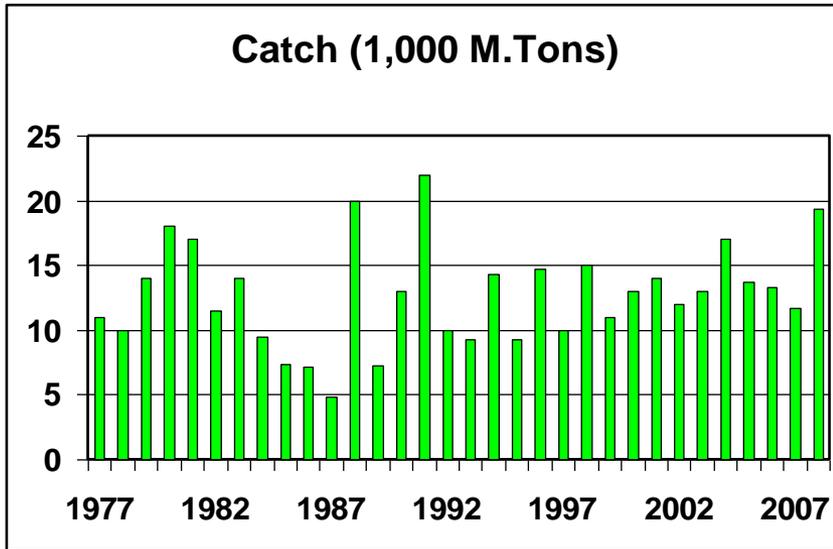


Model Biomass in Thousand M.Tons, Line
= Age 1+ Biomass, Diamond Dots = Female
Spawning Biomass

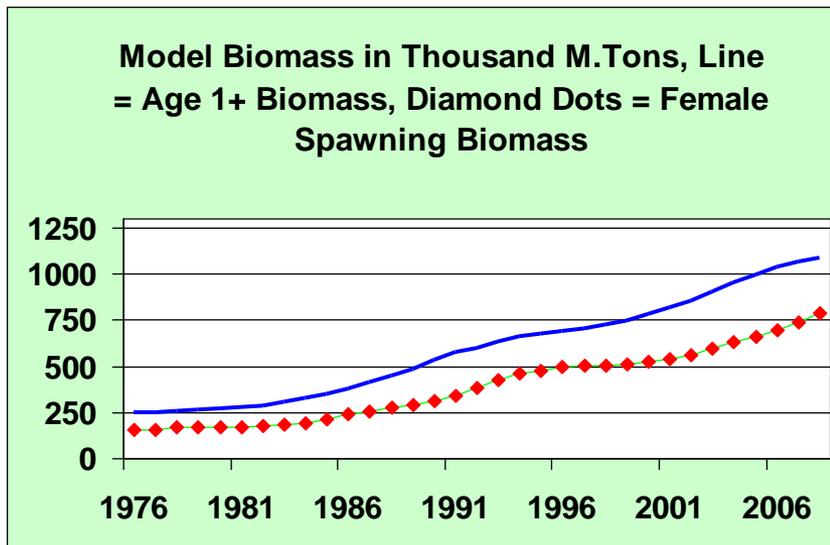
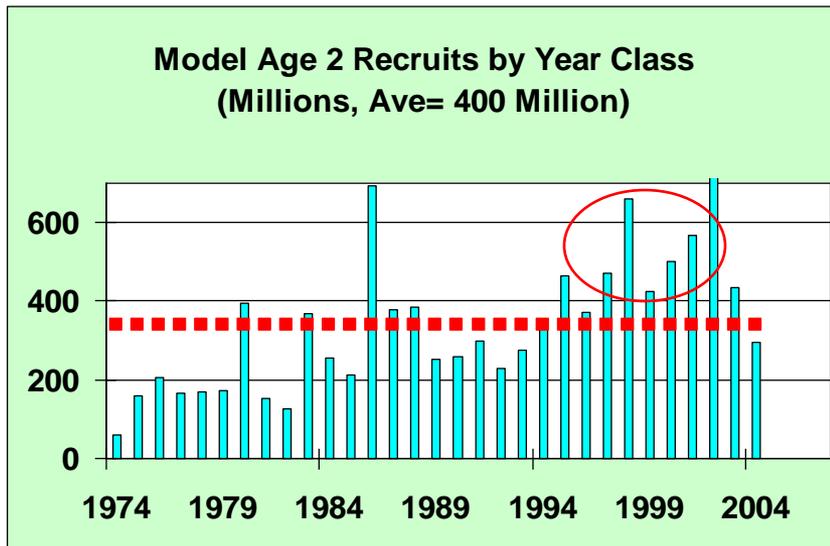


- No changes in analytic approach
- Tier 3a
- Status and trend
 - 2001 YC was 1st strong YC from the 1970s
 - 2006-7 YCs are even stronger
 - Age 1+ biomass and Spawning Biomass have steady declines long term
 - Projected to increase

C6 - Arrowtooth Flounder Stock Assessment, Dec 2008



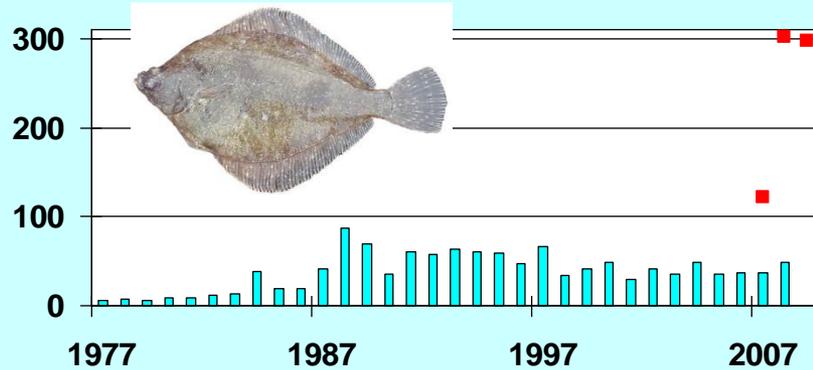
C6 - Arrowtooth Flounder Notes, Dec 2008



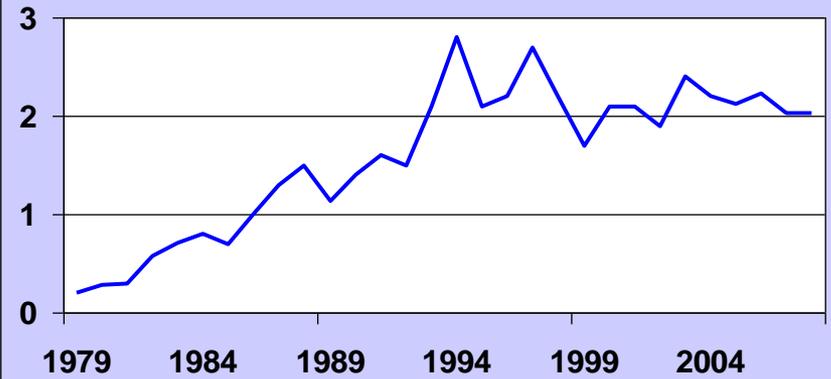
- **No change in Analytical Model**
- **Tier 3a**
- **Stock status and trend**
 - 1995-2003 YCs are above ave.; 1998, 2002 are very large
 - Both Total and Spawning Biomass are increasing steadily

C7 – N. Rock Sole Stock Assessment, Dec 2008

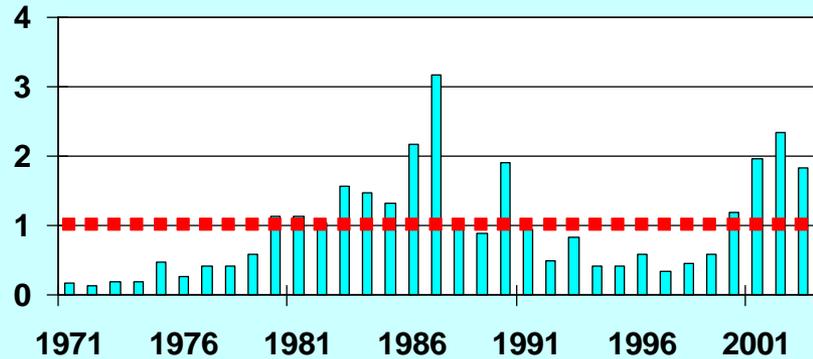
Catch History and recent ABCs (red dots)
Units in 1,000 mt



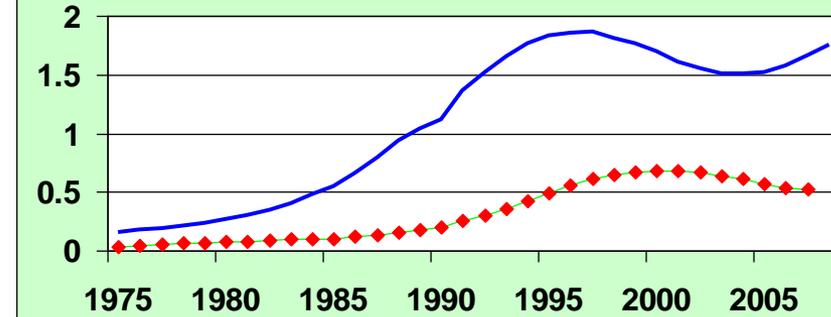
NMFS EBS Survey Biomass
(Million M.Tons)



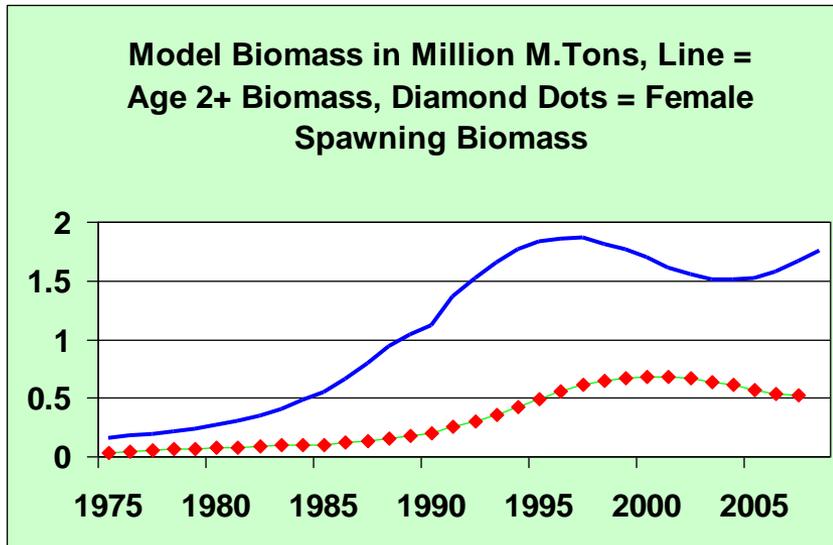
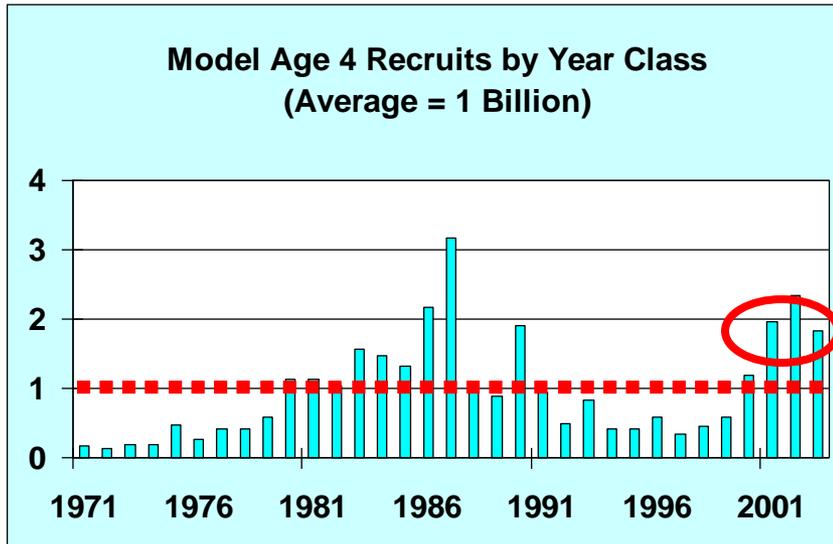
Model Age 4 Recruits by Year Class
(Average = 1 Billion)



Model Biomass in Million M.Tons, Line =
Age 2+ Biomass, Diamond Dots = Female
Spawning Biomass



C7 – N. Rock Sole Notes, Dec 2008



- **Changes in analytic approach**

- Split-sex feature

- Model explorations, 8 versions

- **Tier 1a**

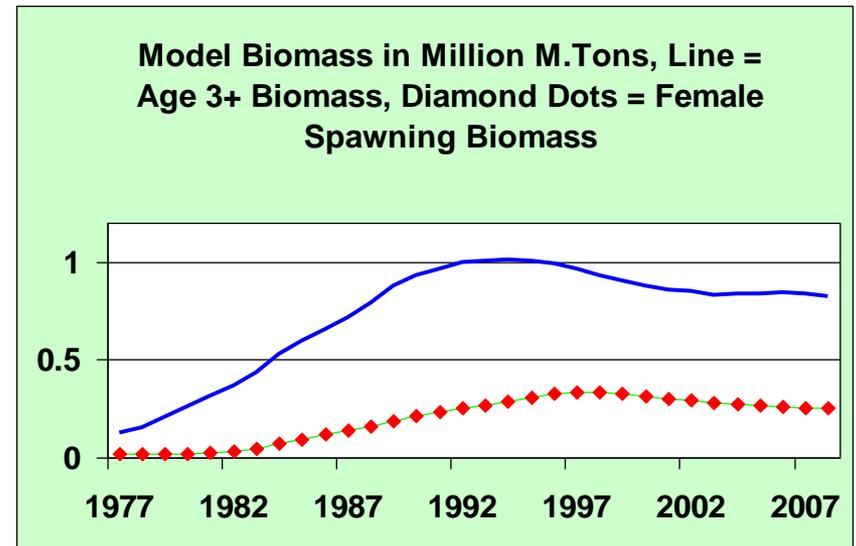
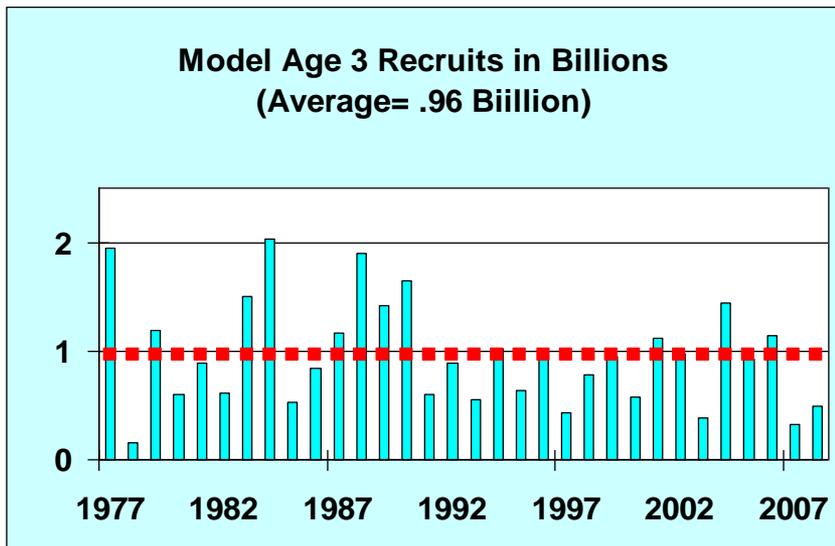
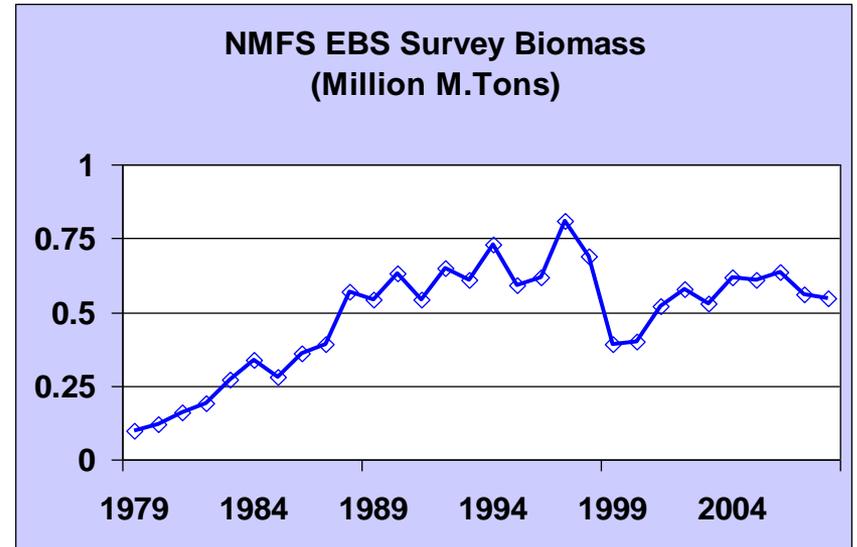
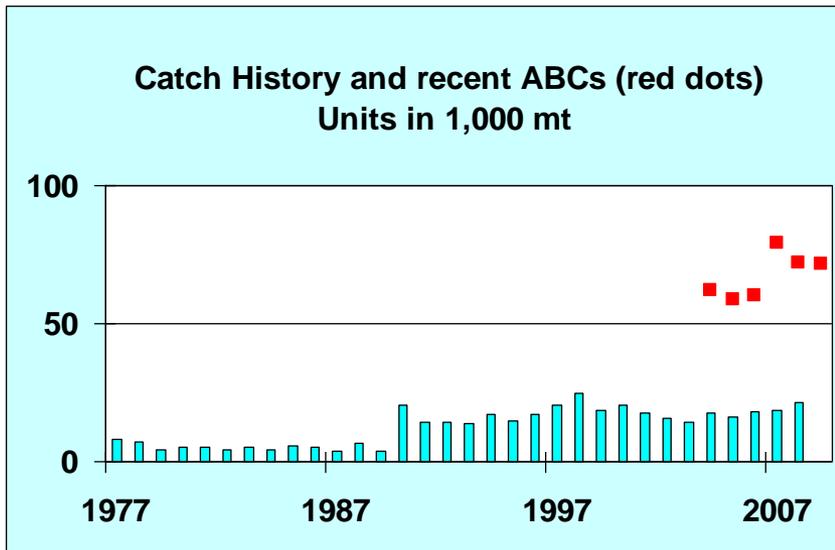
- **Stock status and trend**

- 2001-2003 cohorts are very strong

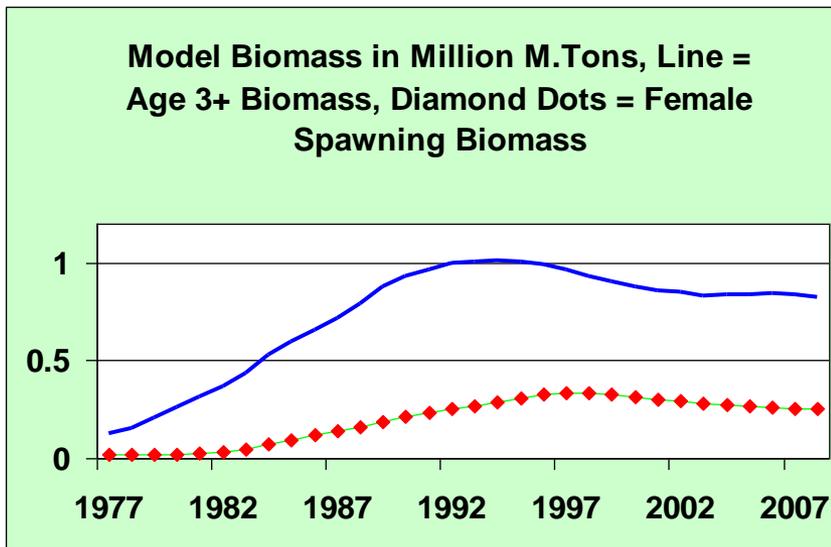
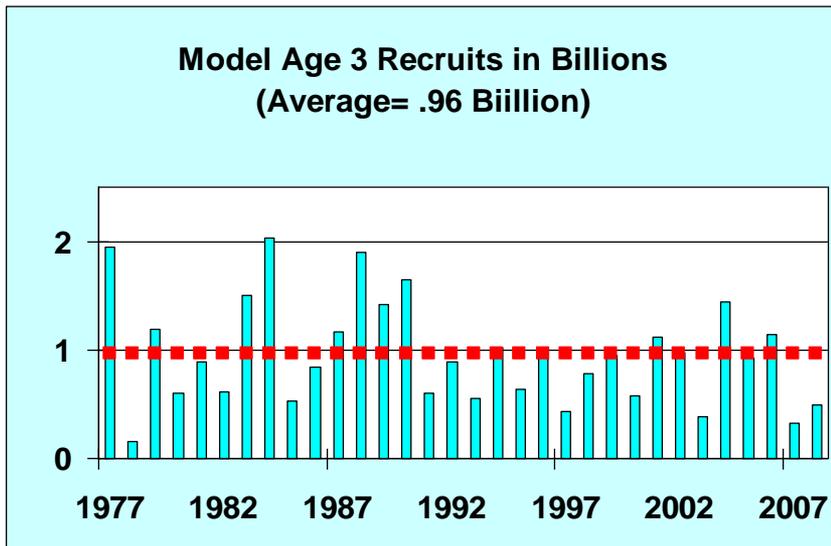
- Age 2+ biomass increasing since 2004

- Spawning biomass shows general increase and stable

C8 - Flathead Sole Stock Assessment, Dec 2008

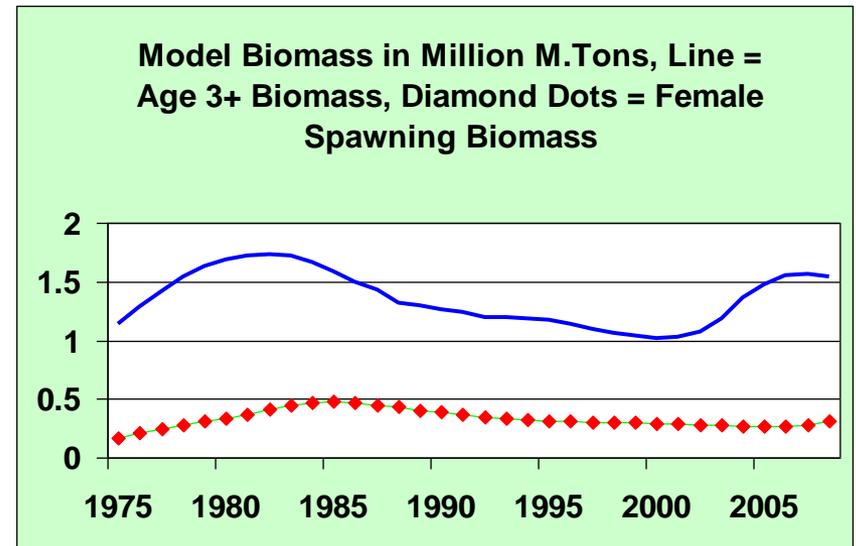
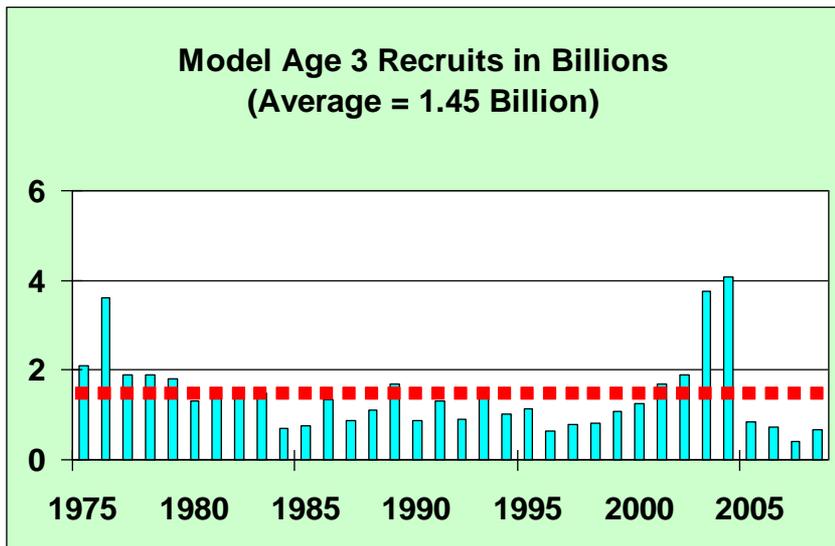
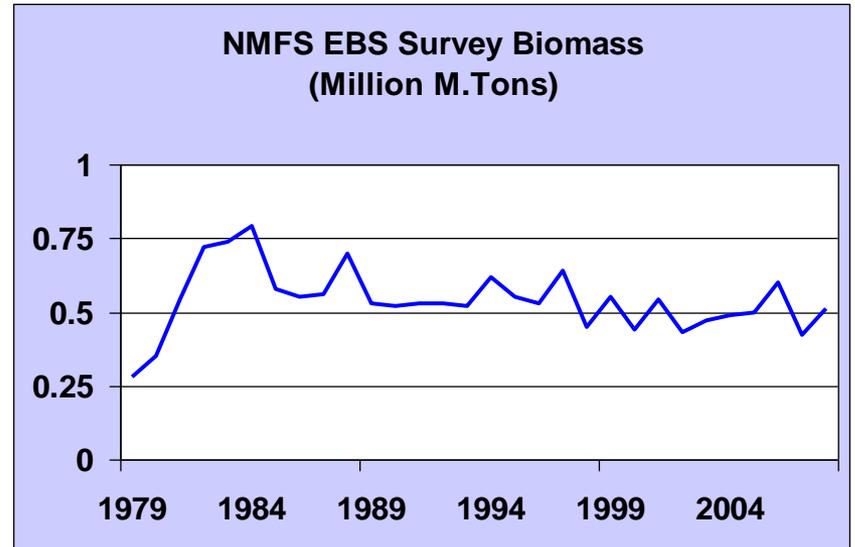
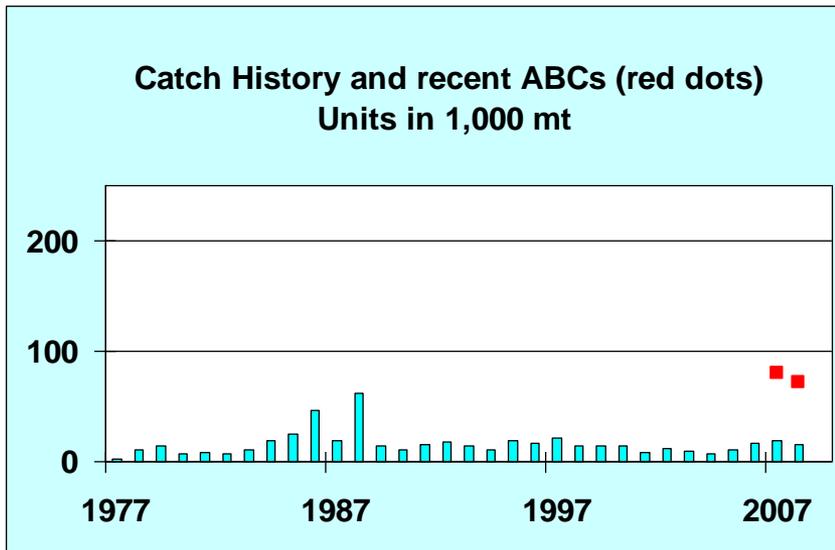


C8 - Flathead Sole Notes, Dec 2008

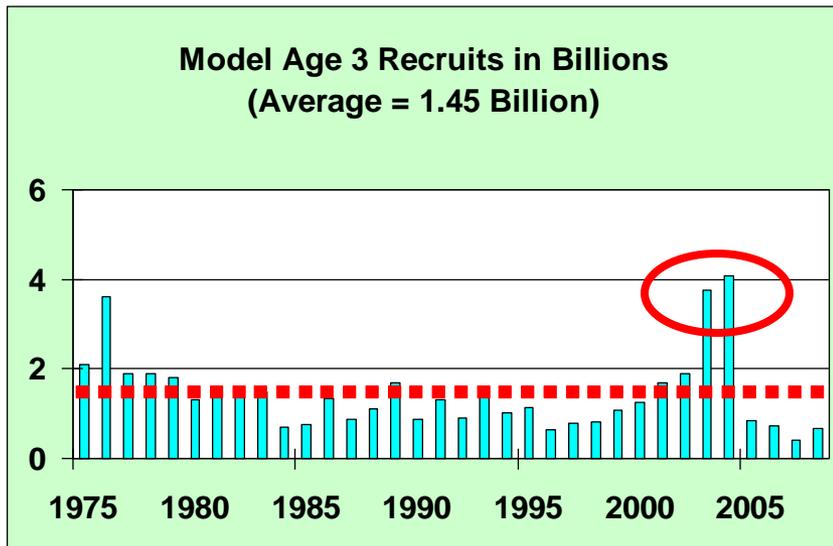


- **No big changes in analytic approach but explored many versions of Model**
- **Tier 3a**
- **Stock status and trend**
 - **Some recent YCs are above average**
 - **Age 3+ biomass stable & High**
 - **Spawning biomass show slow declines since 1997**

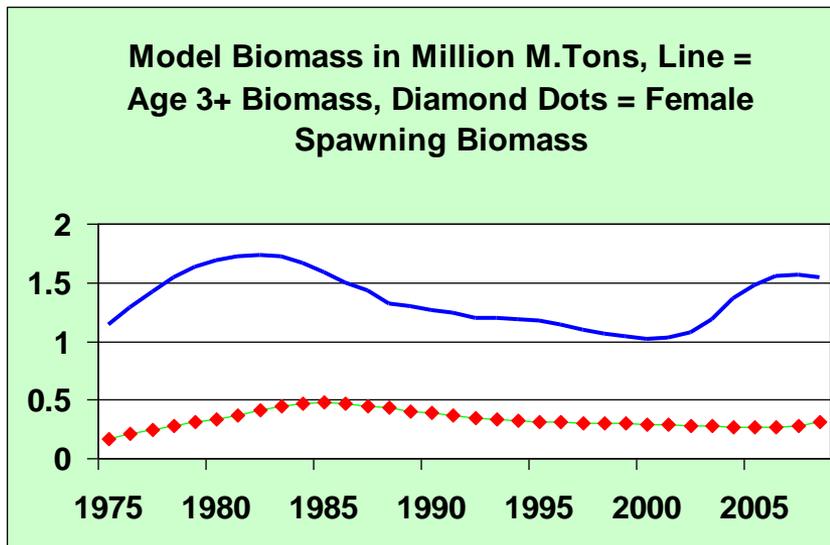
C9 - Alaska Plaice Stock Assessment, Dec 2008



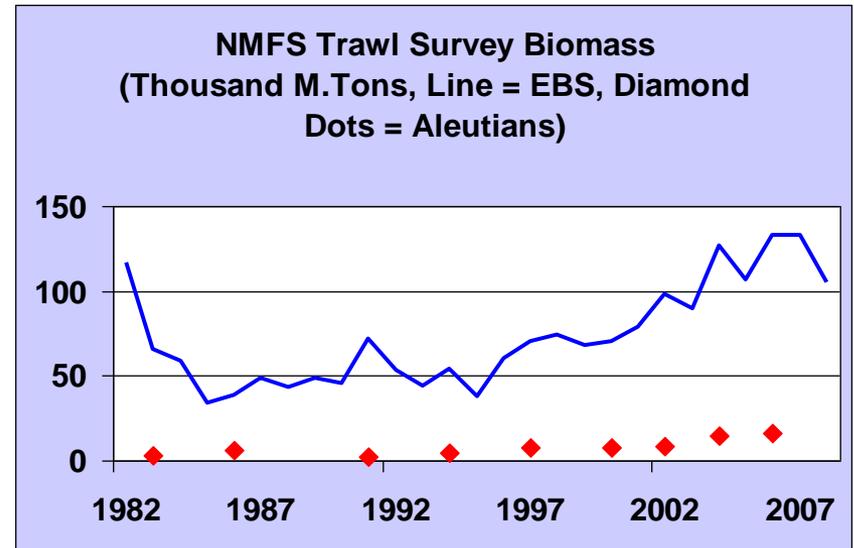
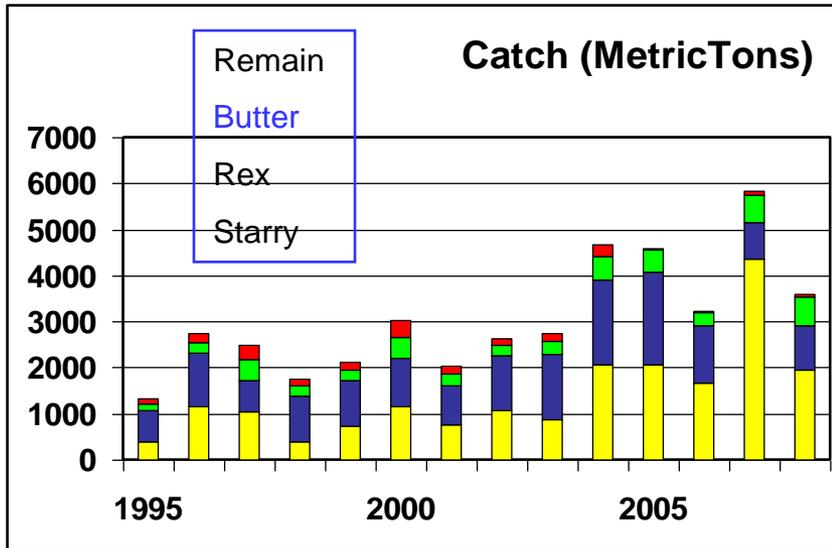
C9 - Alaska Plaice Notes, Dec 2008



- **Split-Sex Model**
- **Tier 3a**
- **Status and Trend**
 - 2000-2001 cohorts very large
 - Age 3+ biomass increased from 2000-2007; slight decline in 2008
 - Spawning biomass is stable



C10 - Other Flatfish Group Assessment, Dec 2008



Model Biomass and Recruitment Estimations are not Available

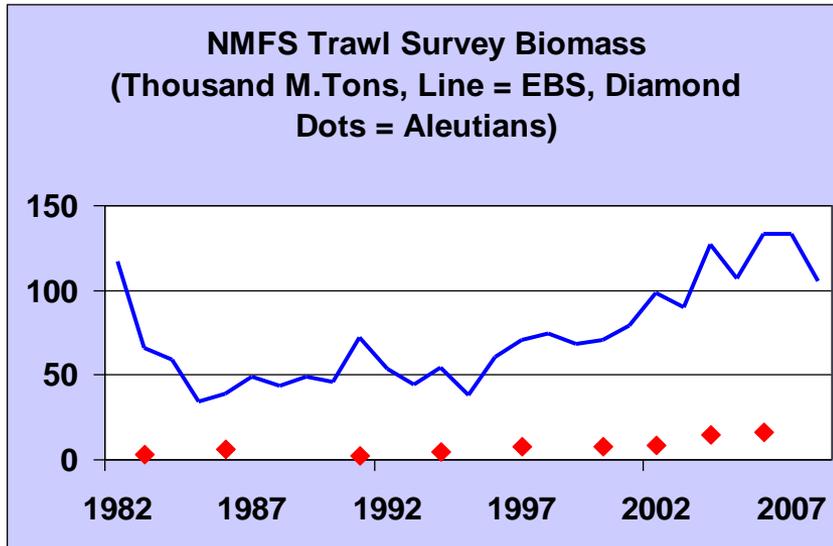
Assessment based on Tier 5 with NMFS Survey Biomass

Assessment Features

1. Species Composition

- 16 species from EBS, 5 species from Aleutians,
- Starry flounder = 74 % of Biomass
- Rex & Butter Sole = 25%

C10 - Other Flatfish Notes, Dec 2008



Assessment Features

1. Species Composition

- 16 species from EBS, 5 species from Aleutians,
- Starry flounder = 74 % of Biomass
- Rex & Butter Sole = 25%

- No changes in analytic approach

- Tier 5

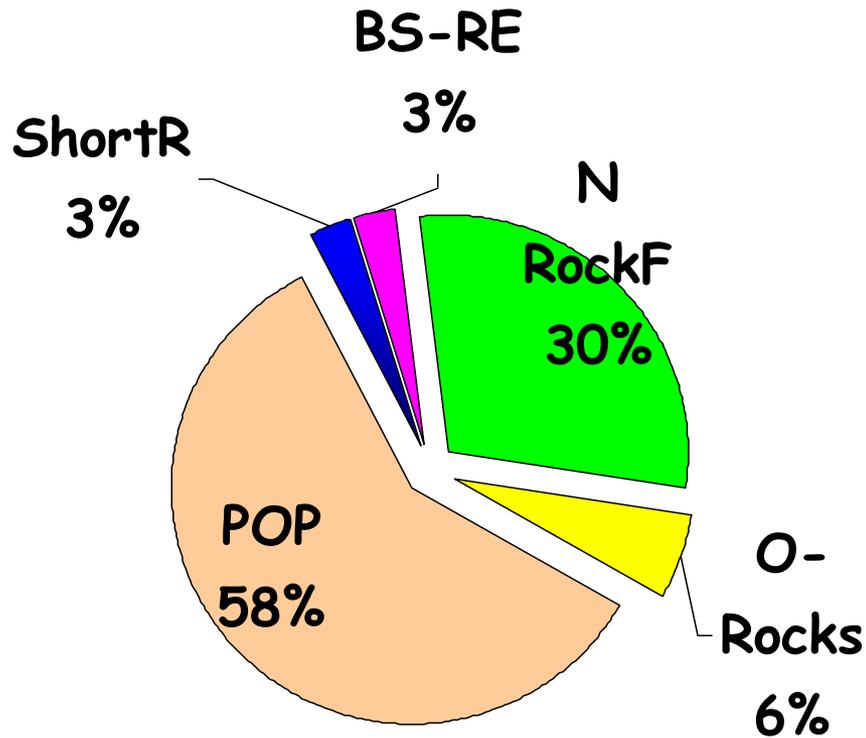
- Status and trend

- 2004-2008 EBS biomasses all higher than 1983-2003

- Biomass has been high

- Exploitation rate has been light

Rockfish Group

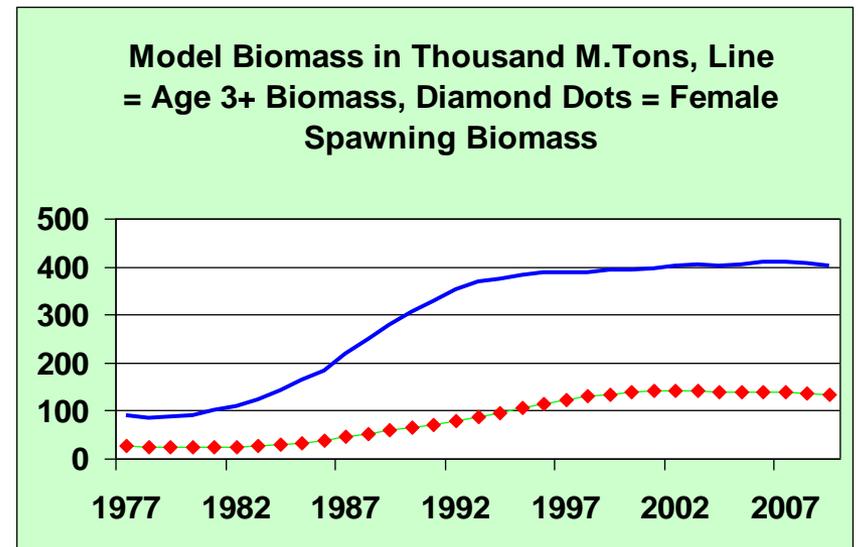
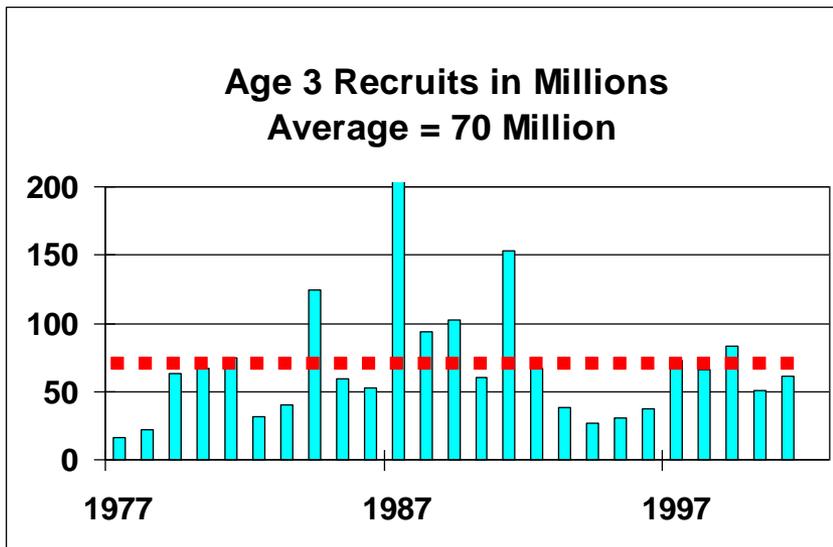
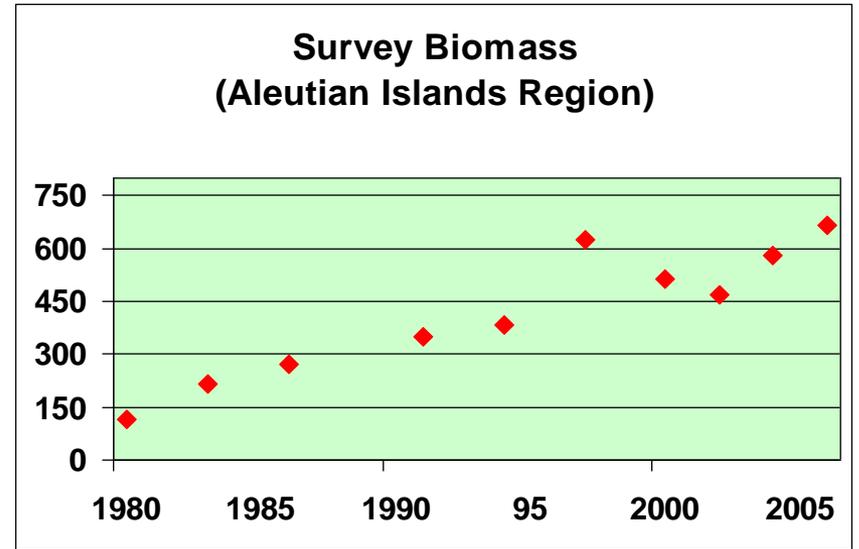
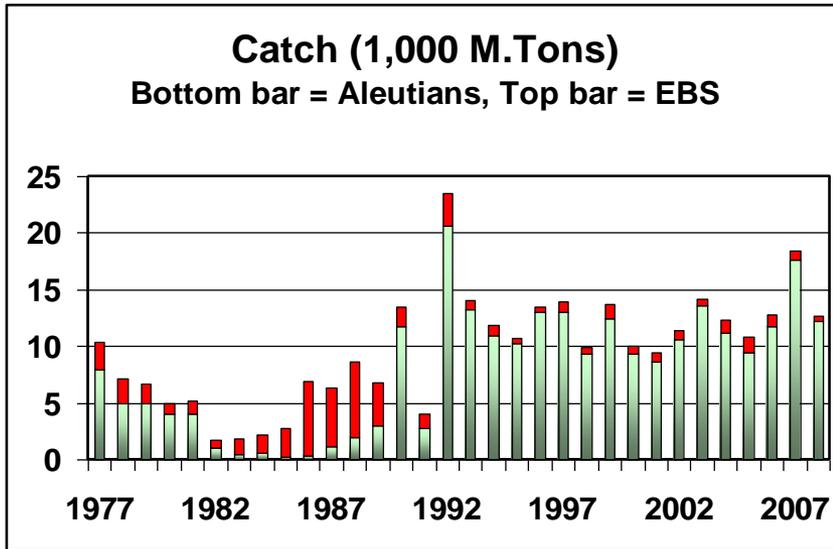


- 4% of Gfish Complex
- Biomass mostly in Aleutians
- POP and Northern RockFish dominate

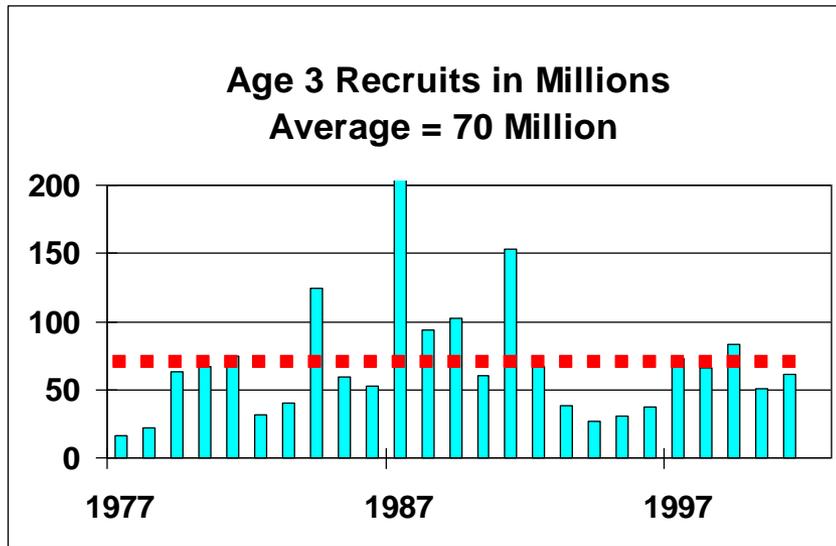
Rockfish Assessments

- 1. Major Updates of Assessment are on 2 year cycle to coincide with Aleutian Islands surveys. No survey in 2008.**
- 2. Estimates for 2009 are based upon last years analysis and re-running projection models with new 2008 catch data**
- 3. Analyzes for POP and Northern Rockfish groups are based on Age Structured Models and their ABCs are calculated under Tier 3.**
- 4. ABCs for all other rockfish groups are dependent directly on survey biomass under Tier 5 calculations, where $ABC = 0.75M \times \text{Biomass}$**

C11 - Pacific Ocean Perch Stock Assessment, Dec 2008



C11 - Pacific Ocean Perch Notes, Dec 2008



- No big changes in analytic approach

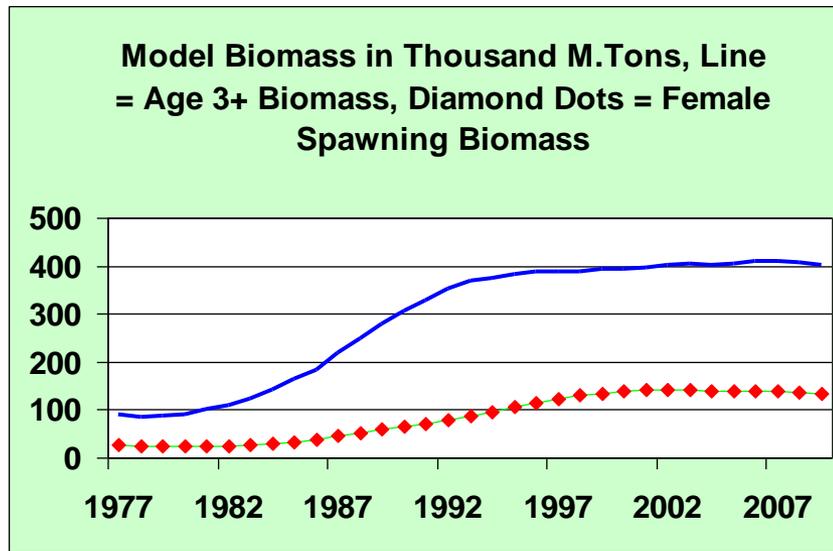
- Tier 3a

- Status and Trend

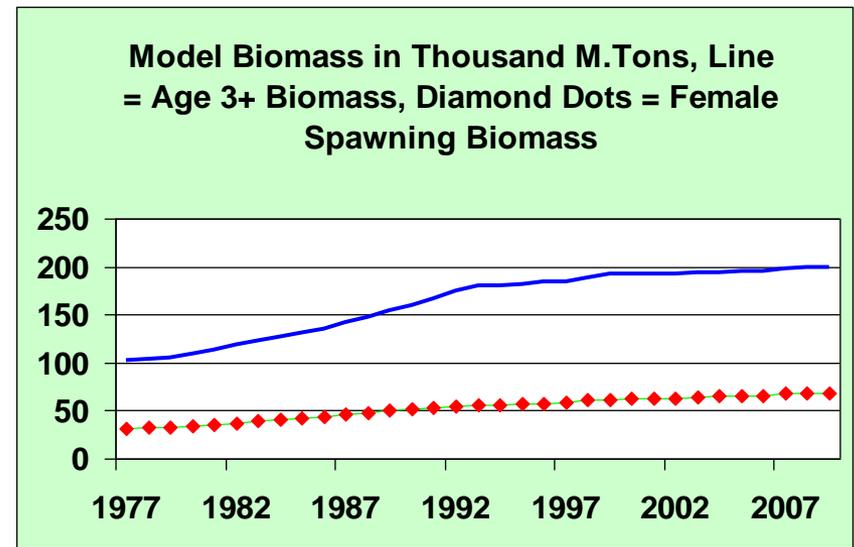
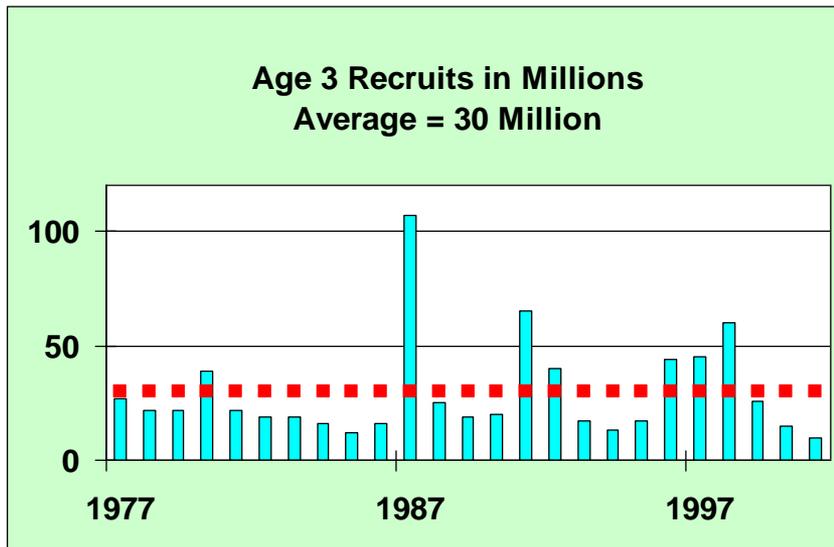
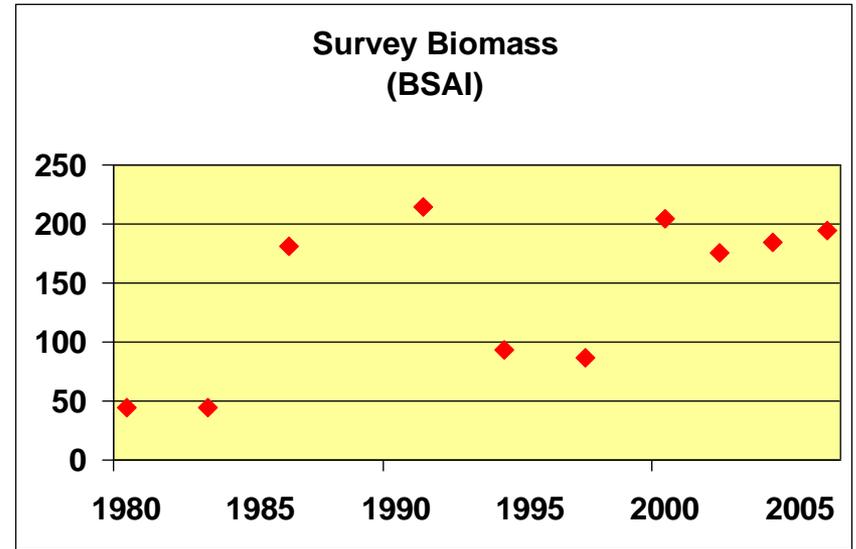
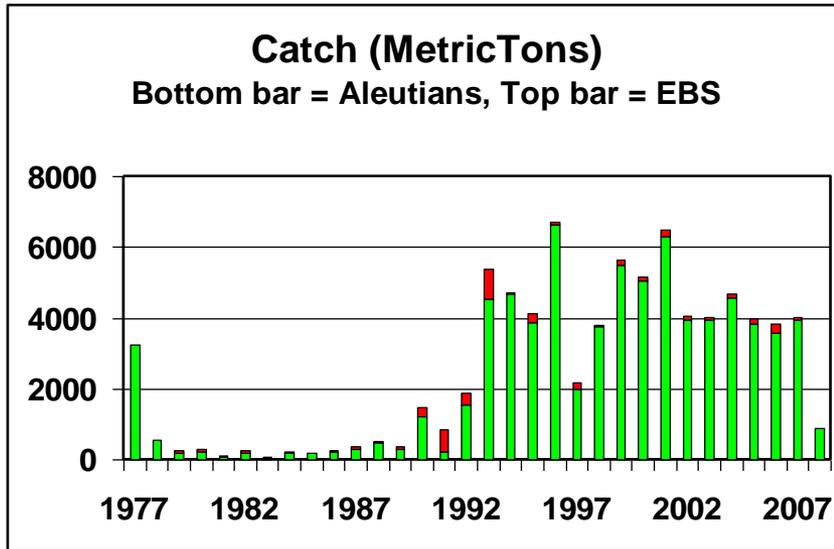
- 2004-2008 EBS biomasses all higher than 1983-2003

- All biomass is now steady

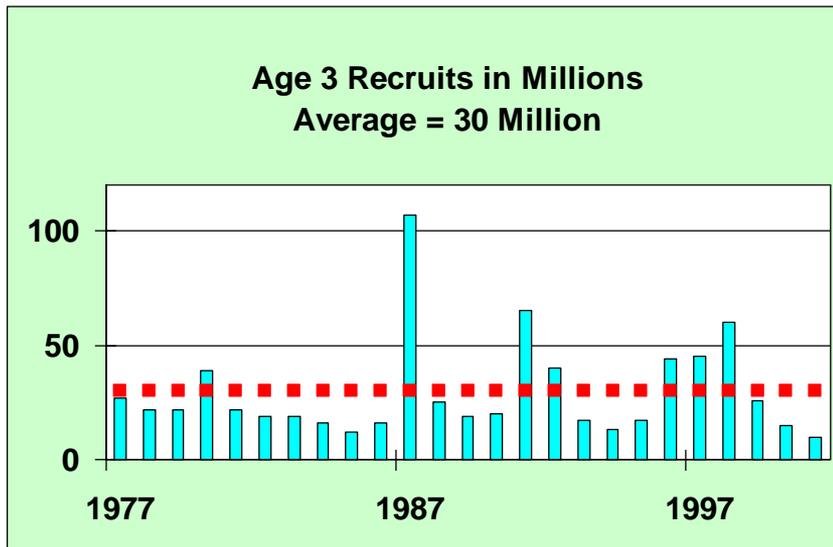
- Exploitation rate has been generally light



C12 - Northern Rockfish Stock Assessment (Dec 2008)



C12 - Northern Rockfish Notes, Dec 2008



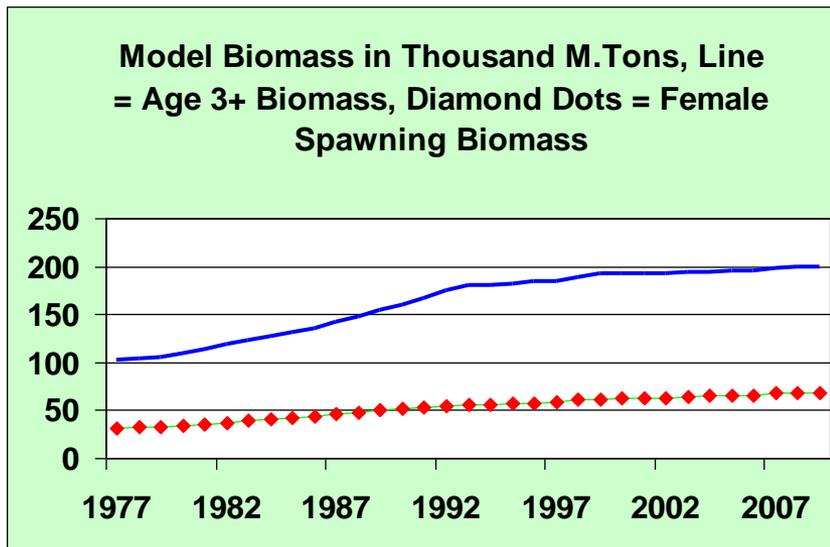
- No big changes in analytic approach

- Tier 3a

- Status and Trend

- 1984, 1988, 1995 cohorts very strong; 1989, 1993, 1994 above ave.

- Age 3+ biomass and spawning biomass are on steady increase since 1977



Chapter 13a: Shortraker Rockfish (p. 1019)

- Split from Shortraker-Rougheye Group
- Changes in analytic approach
 - Two-species surplus production model now 1-species
- Tier 5
- Status and Trend
 - Biomass has declined continuously since 1980

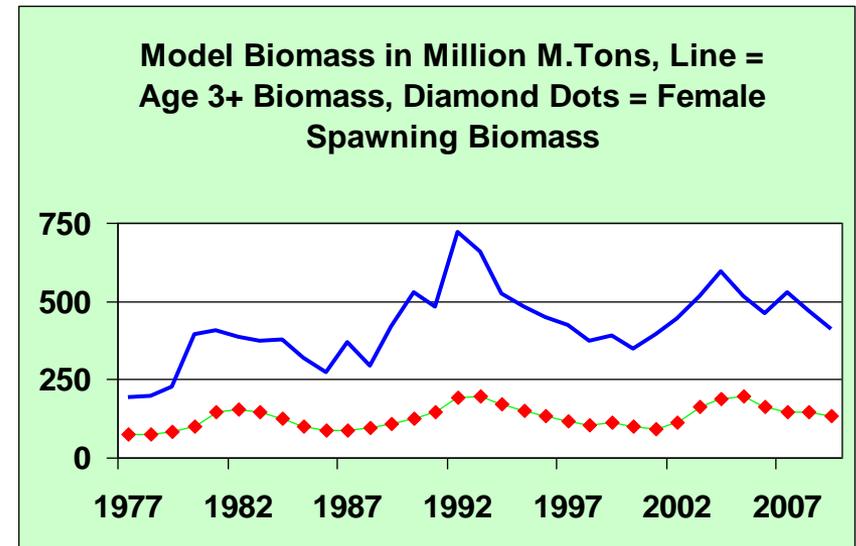
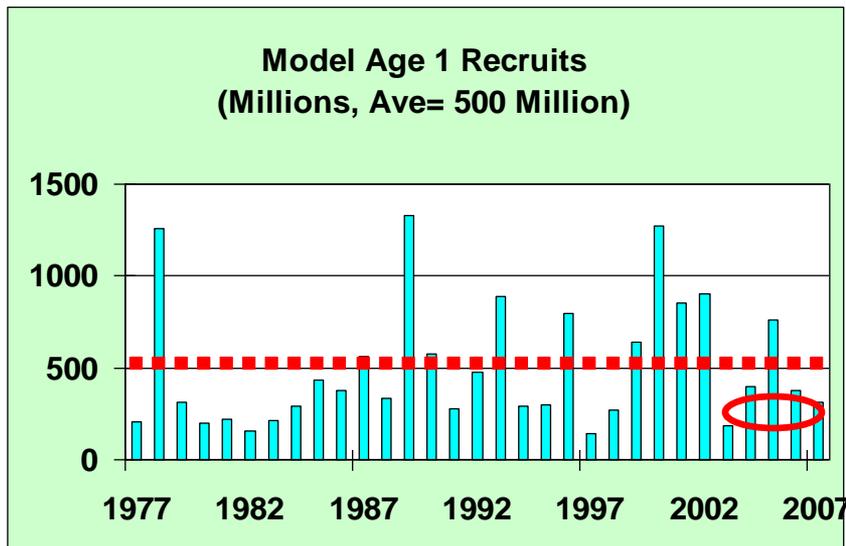
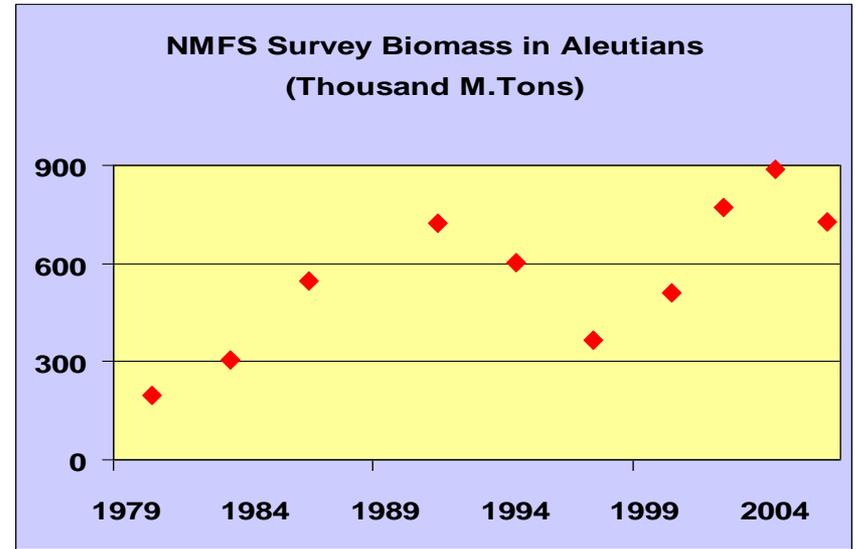
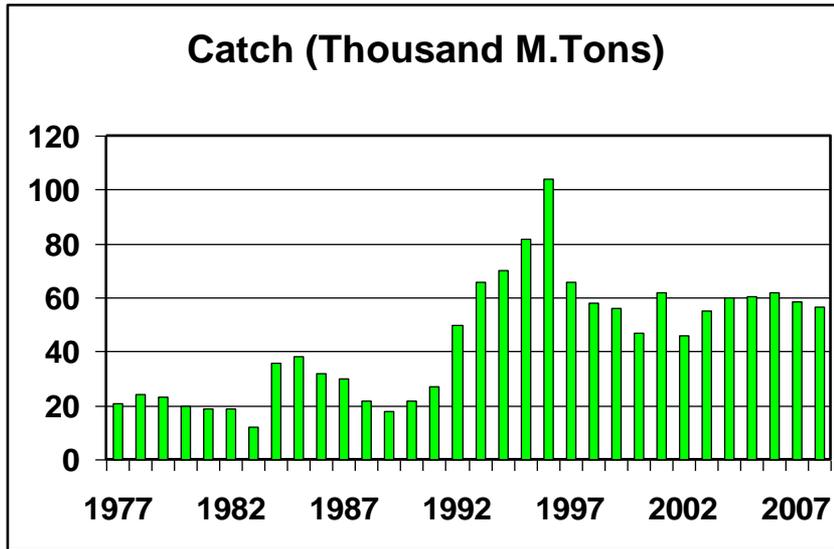
Ch. 13b: Blackspotted / Rougheye (p. 1043)

- Species are now separated out
 - Blackspotted far more abundant in BSAll
 - But composition differ between BS and AI
- Changes to analytic approach
 - First use of age-structured model
- Status and Trend (AI, Tier 3b)
 - 1998 YC is enormous (5× ave.); 1999, 2000 strong
 - Age 3+ biomass and Spawning Biomass are increasing since 2002
- Status and trend (BS, Tier 5)
 - Large year-to-year variability in survey biomass
 - 2006 biomass is near high end of 1991-2006 range

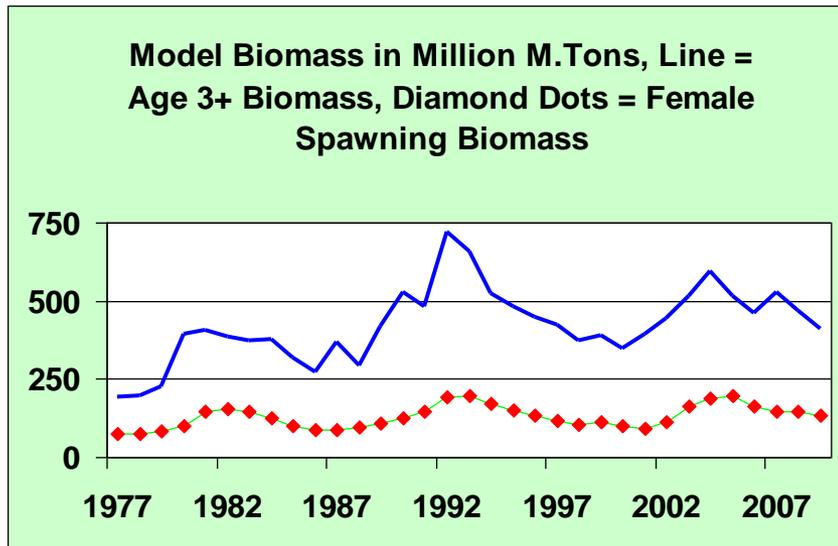
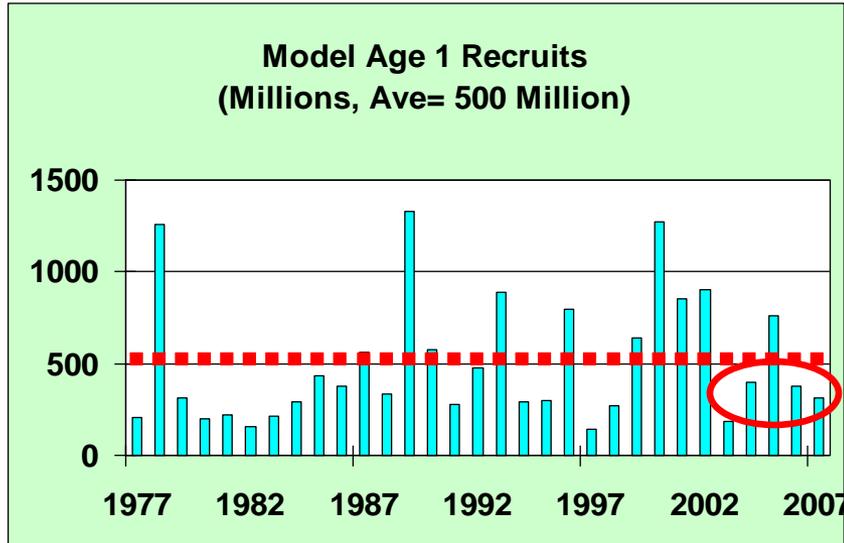
C14: Other Rockfish Complex

- **Former complex included 8 species**
 - Shortspine thornyhead is now separated out, Dusky rockfish dominant
- **Biomass Trend**
 - Survey Biomass has general increase
 - Spawning Biomass trend is unknown
- **Straightforward update of SOS from before**
 - ABC Calculation based on Tier 5

C15 - Atka Mackerel Stock Assessment, Dec 2008

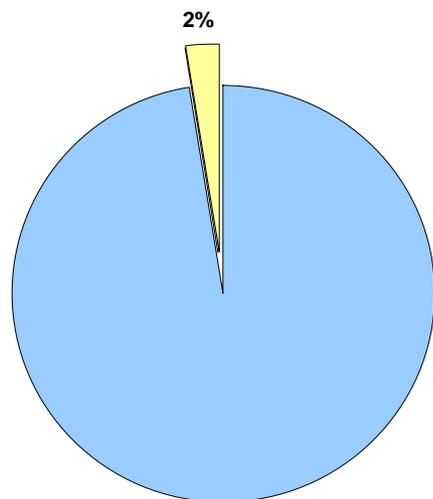


C15 - Atka Mackerel Notes, Dec 2008



- 2% of BSAI Complex
- Many model changes (in response to CIE)
- Tier 3a
- No survey since 2006
- Status and Trend
 - Some weak year classes in last 4 years
 - Total biomass reached all-time high in 2003; decreasing since
 - Spawning biomass reached all-time high in 2005; decreasing slightly

C16-20. Squid and Other Species Resources, Dec 2008 Assessments

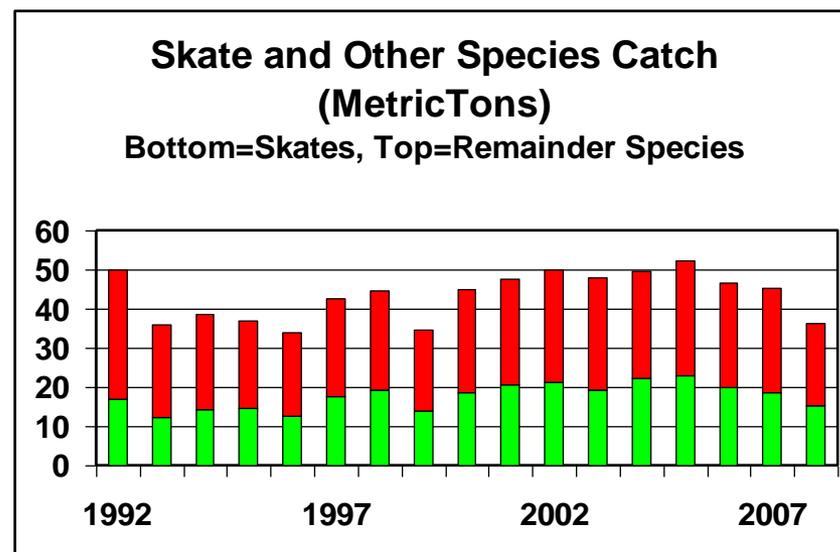
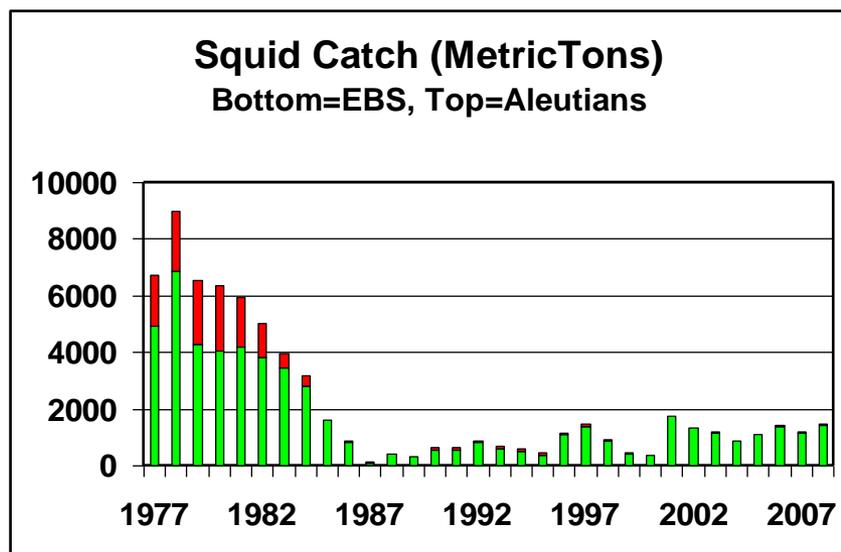


**2007 Groundfish
Catch = 1.858 + mmt**

Squid = 1,500mt

**Skate & Others =
45,200 mt**

Combined = 2.0 %



C16-20. Squid and other species Assessment

ABC Calculations

- 1 **Squid ABC is calculated under Tier 6**
average catch from 1977-1995, ABC = 1,970 mt
2. **Other species: author recommends managing by major taxonomic groups under Tier 5**

Species	Biomass (mt)	ABC (mt)
Sharks	n/a	447
Skates	634,000	35,000 (Tier 5 by SSC)
Sculpins	234,000	31,000
Octopus	n.a.	233
Total	868,000+	66,700

3. **Now managed by a group; but Plan Team and Authors recommend management by Break-out Species groups on the long run**

Adjustments to ABCs

- due to Special Ecosystems Concerns

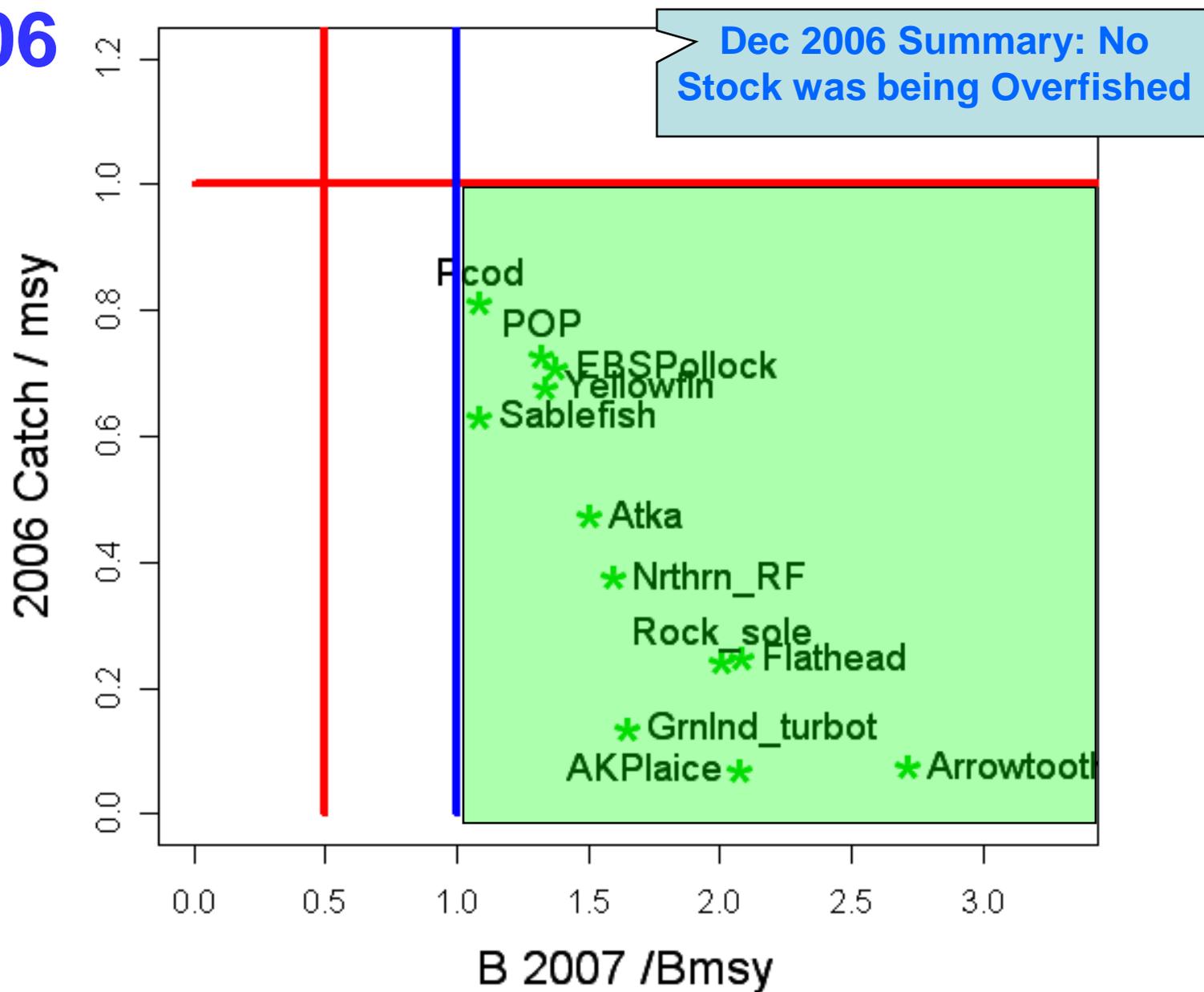
1. The Team did not make specific adjustments to ABCs for ecosystem concerns
2. General Concerns about ecosystem considerations have already been built into the Analyses
3. Ecosystems evaluations have been more extensive each year

Report Card on Status of Stocks

**Relative to
Fishing Levels (Vertical Scale)
and
Reference Biomass Levels
(Horizontal scale)**

Bering Sea and Aleutian Islands Region

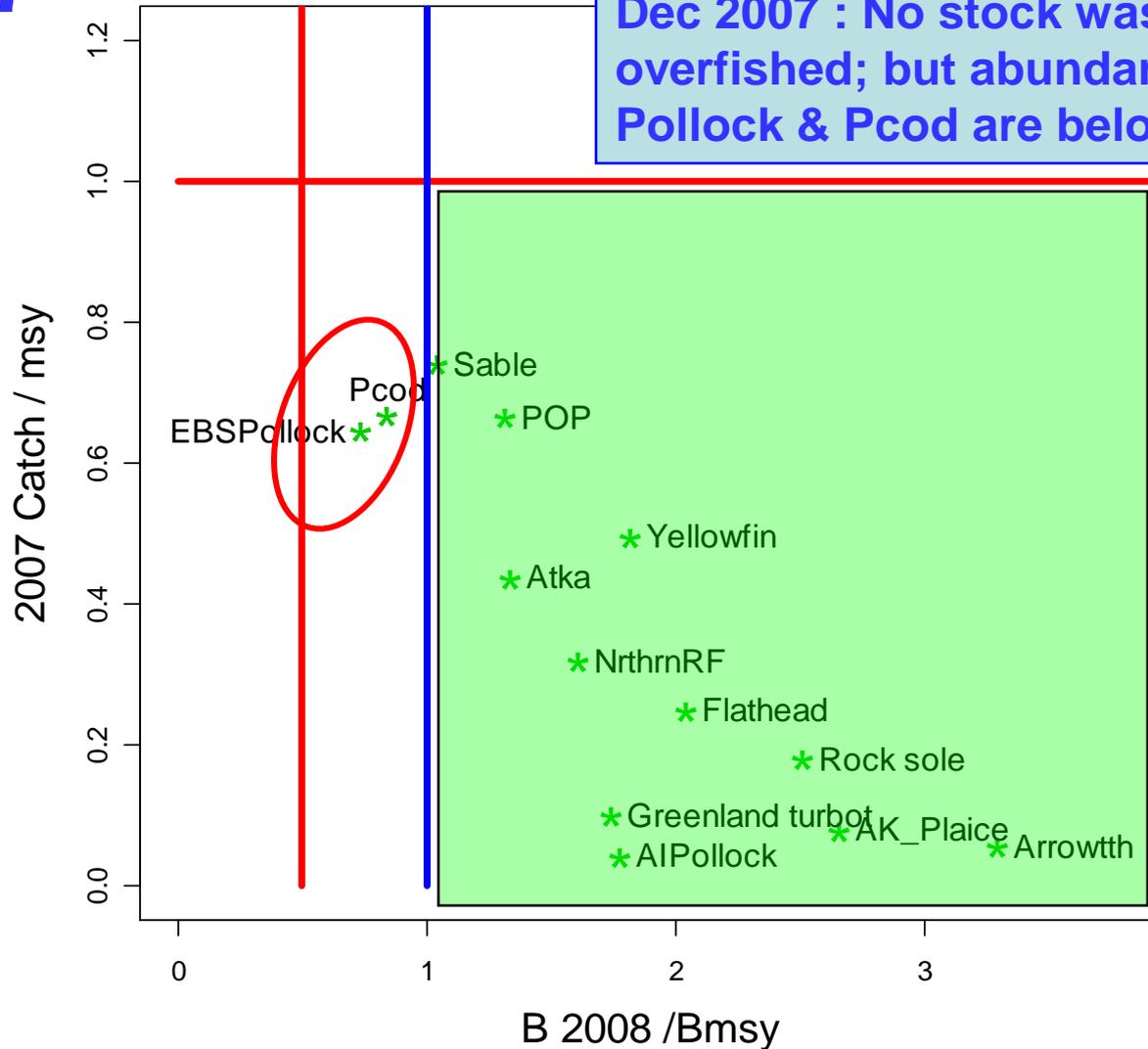
2006



2007

Bering Sea and Aleutian Islands Region

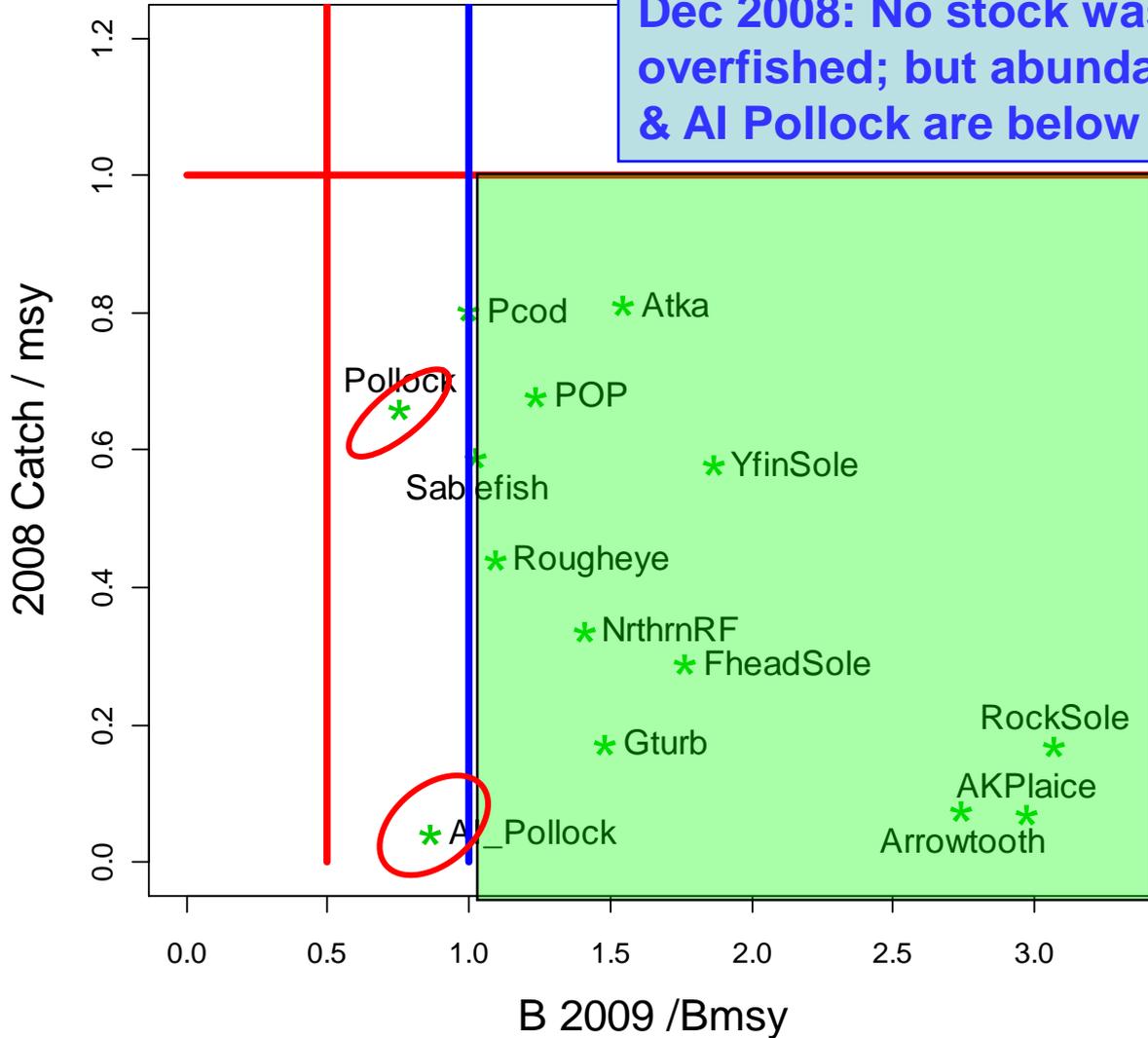
Dec 2007 : No stock was being overfished; but abundance of EBS Pollock & Pcod are below Bmsy



2008

Bering Sea and Aleutian Islands Region

Dec 2008: No stock was being overfished; but abundance of EBS & AI Pollock are below Bmsy



SSC vs Plan Team Estimates, Dec 2008

Stock	SSC ABC (mt)	PT ABC (mt)	Reasons for Change
Aleutians Pollock	26,900	15,300	SSC picked max ABC using model, Team used Tier 5, Debate over model
Pacific Cod	182,000	176,000	SSC picked max ABC, Team stayed ABC

Ecosystems Considerations Chapter Highlights from Kerim Aydin's Presentation to SSC and AP

- 1. No BSAI groundfish stock or stock complex is overfished nor subject to overfishing (from SOS analyses).**
- 2. No systematic decline in the amount of large fish from 1982 to 2006. (from community size spectrum analysis of the EBS).**
- 3. Recent exploitation rates on biological guilds are within 1 SD of long-term mean levels. [Except the Bering Sea forage species guild (dominated by pollock) had above 1 SD higher exploitation rates during 2005-2007. The new rates for 2009-10 are again within 1 SD of the historical mean.]**

Ecosystems Considerations Chapter Highlights from Kerim Aydin's Presentation to SSC and AP (Continued)

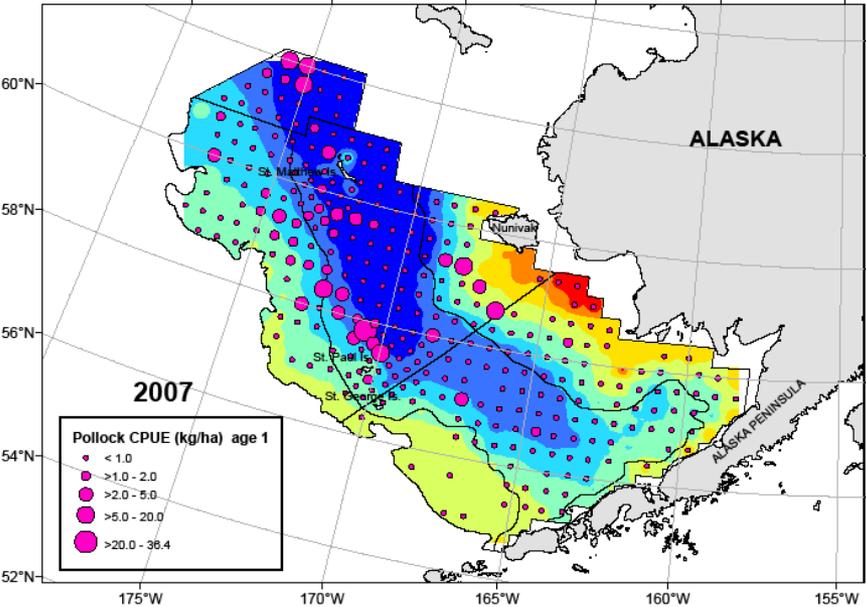
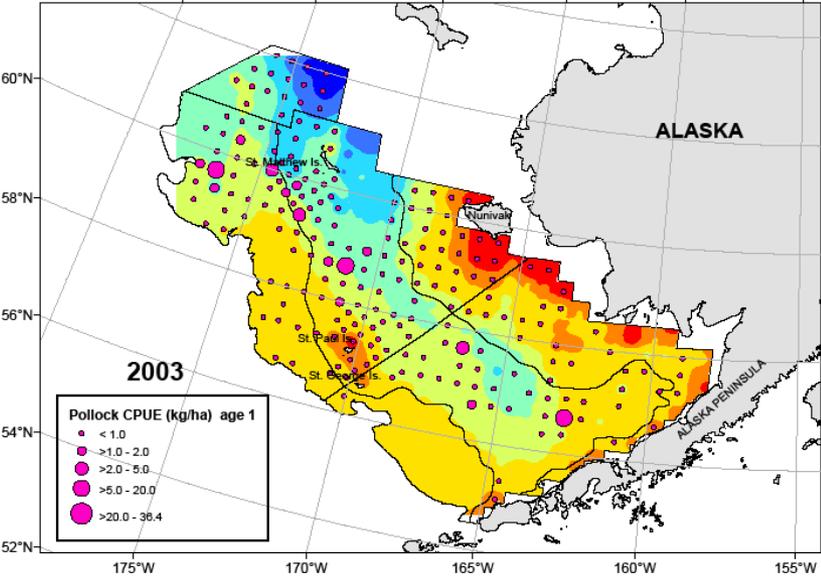
- 4. Discards & discard rates are below those prior to 1998**
- 5. Five new closures in 2008 as part of protection for EFH encompass a large part of the N. Bering Sea. (Almost 50% of Alaska's EEZ is now closed to bottom trawling)**
- 6. Despite warming trends throughout the Arctic, Bering Sea climate will remain controlled by large multi-annual natural variability'. Over the next 5 years, look for a shift back toward warmer temperatures and less sea ice.**
- 7. In the Bering Sea, there is a return to below average groundfish recruitment from 2004.**

Example Ecosystem Discussions on Pollock

Age 1 Pollock Distribution

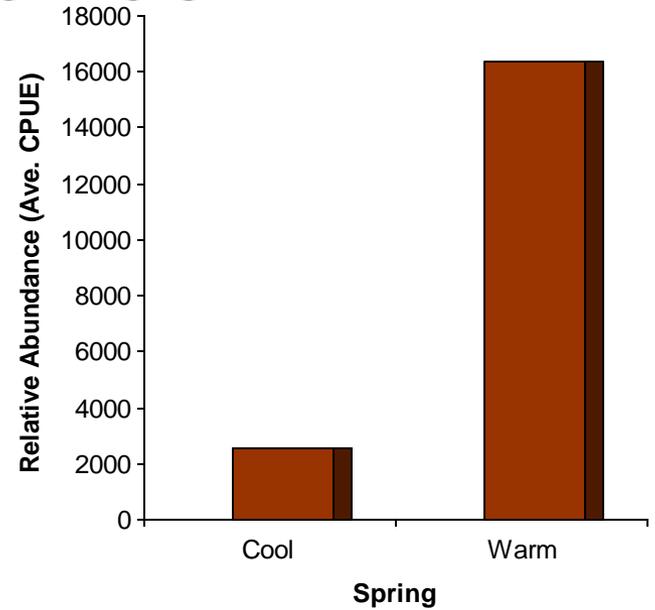
Densities were lower in warm year (2003)

versus cold year (2007)



Age 0 Pollock Abundance

WARM



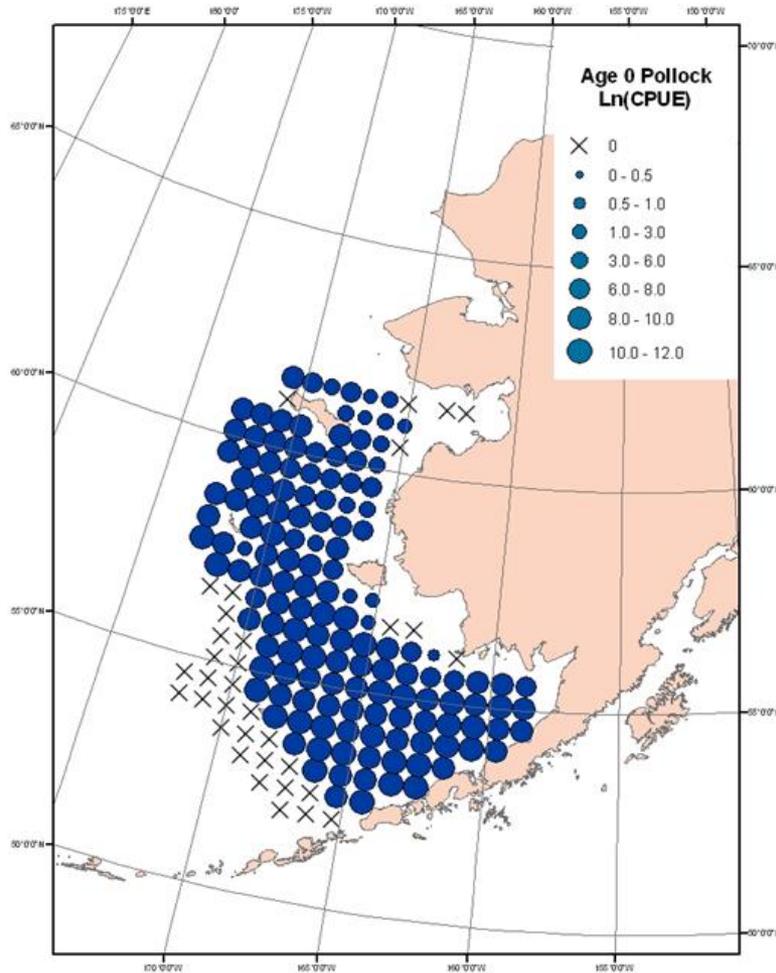
COOL

Slide from Aube Bay Lab BASIS
Cruises from Ed Farley

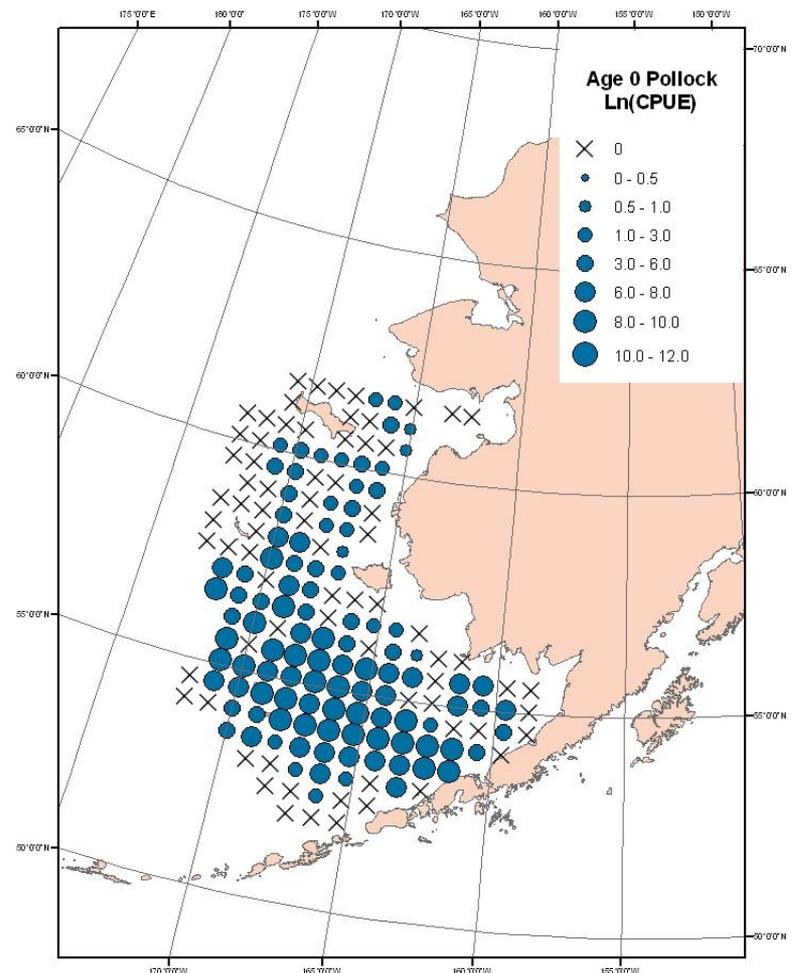
Age-0 Pollock Distribution

Slide from Auke Bay Lab BASIS Cruises from Ed Farley

WARM

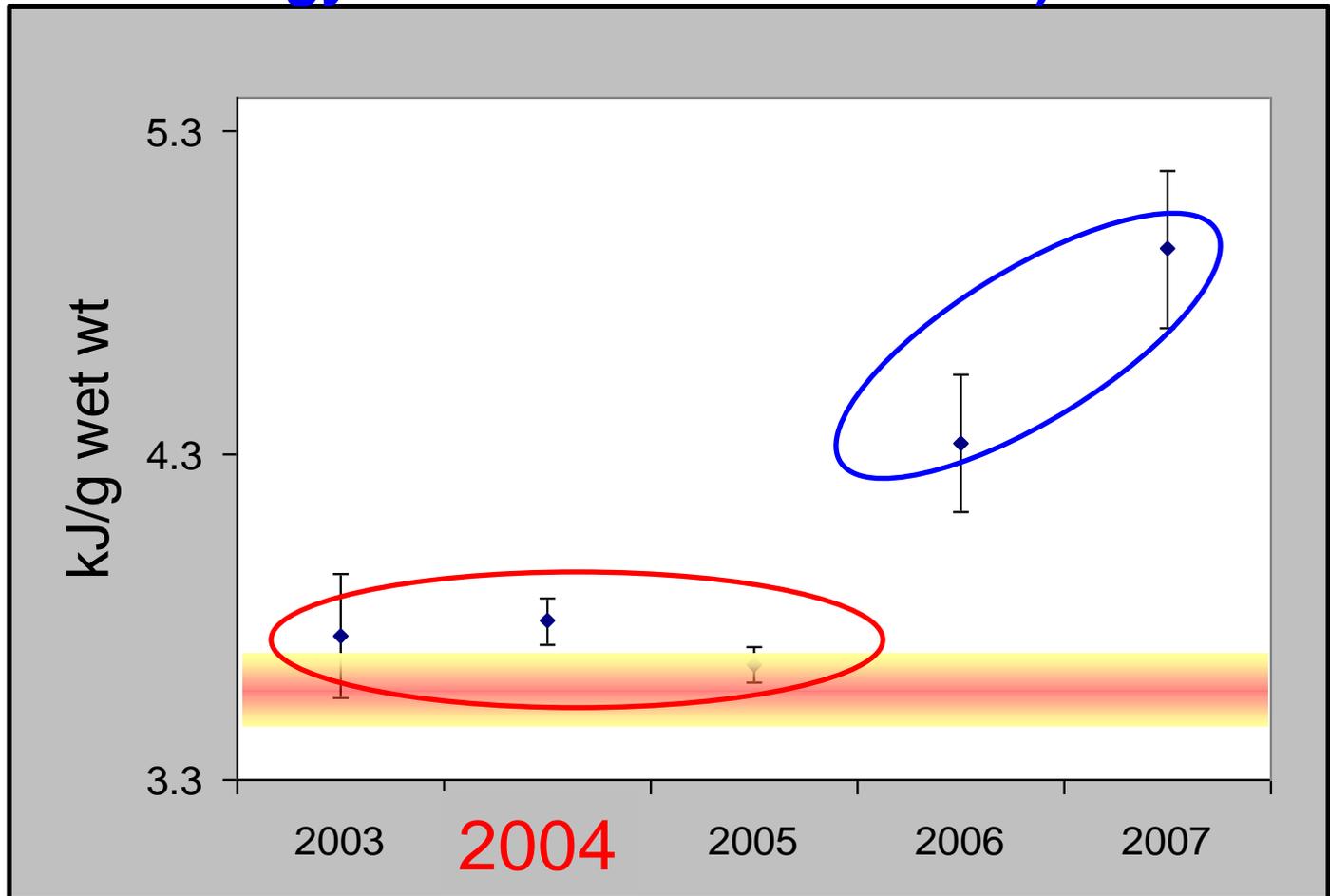


COOL



BASIS Data

Condition Factor of Age-0 Pollock in September (Lower Energy content in Warm Years)



Diamonds with error bars are data from Bering Sea (Fall)
and orange bar is data from SE Alaska (Spring)

Figure courtesy of Ron Heintz, Auke Bay Labs, AFSC, NOAA

End of Presentations

- Extra Slides of Interest Follows

Summary (Pollock)

(From Table 5, Team Summary Appendix A)

Stock	Biomass (mt)	ABC (mt)	ABC Change from 2007
Pollock, EBS	6,24,000	815,000	Down 18%
Pollock, AI	266,000	15,300	Down 56%
Pollock, Bogoslof	292,000	7,970(SSC)	No Change

Summary (Cod and Sablefish)

(From Table 5, Team Summary Appendix A)

Stock	Biomass (mt)	ABC (mt)	ABC Change From 2007
Pacific Cod, BSAI	1,260,000	176,000	No Change
Sablefish, EBS	39,000	2,720	Down 5 %
Sablefish, AI	28,000	2,220	Down 10 %

Summary (Flatfishes)

(From Table 5, Team Summary Appendix A)

Stock	Biomass (mt)	ABC (mt)	ABC Change from 2006
YellFn. Sole	1,870,000	210,000	Down 15%
Grn. Turbot	105,000	7,380	Up 191%
Arrow. Fl.	1,140,000	156,000	Down 36 %
N.RockSole	1,630,000	296,000	Down 2 %
Flathead S	834,000	71,400	Unchanged
Alaska Plaice	1,500,000	232,000	Up 20 %
Other Flats	121,000	17,400	Down 19 %

Summary (Rockfishes)

(From Table 5, Team Summary Appendix A)

Stock	Biomass (mt)	ABC (mt)	ABC Change From 2006
POP, BSAI	402,000	18,800	Down 13 %
Northern R	200,000	7,160	Down 22%
ShortRaker	17,200	384	Down 9%
Rougheye	19,000	202	Up 167%
Other Rock	39,700	1,040	Up 4%

Summary (Atka Mackerel & Other Species)

(From Table 5, Team Summary Appendix A)

Stock	Biomass (mt)	ABC (mt)	ABC Change From 2006
Atka Mackerel	411,000	83,800	Up 38 %
Squid	NA	1,970	No Change
Other Species	822,000	66,700	Down 7%

Aleutian Islands Region Pollock Assessment

A. Fishery

1. Pollock fishing has been closed from 1999.
2. Fishery reopened in 2005 (19,000 t TAC to the Aleut Corp).
3. This allocation continued. Catches were low (400 t by Directed fishery and 800 t as bycatch for 2008)

B. Fish Distribution

1. Pollock schools are patchy and hard to find.

C. Stock Assessment

1. Age Structured Model was first developed in 2003.
2. The assessment process was reviewed by CIE in 2008
3. Improved models were develop based on CIE recommendations

C. ABC Determination

1. This is a Tier 3b Stock
2. All the essential estimates are provided by the Model.
3. The model Tier 3b estimate of max ABC = 26,873t but the Plan Team recommended using Tier 5 to set ABC at 15,500 t for questions of high uncertainties about the model results.

EBS walleye pollock, continued

- **ABC recommendations**

- 2009 ABC = 815,000 t; 2010 ABC = 1.23 million t

- **Comments on 815,000 t ABC:**

- Spawning exploitation rate is within range experienced from 1979-2005, below high 2006-2008 values

- Tier 1 already has built-in precautionary adjustment & Uncertainties

- 2009 ABC of 815,000 t, already an 18% reduction from 2008 ABC

- Strength of 2006 cohort has been confirmed and confidence interval has tightened; consistent with temperature and copepod abundance trends

- Stock expected to return to near Bmsy by 2010

C13a,b - Shortraker & Blackspotted-Rougheye Group Assessments, Dec 2008

